

BIBLIOGRAPHY OF UPPER DEVONIAN SHALE SEQUENCE

Prepared by

J. C. Triplett  
D. B. Trumbo

Edited by

S. E. Smith  
W. K. Overbey, Jr.

December 1975

## CONTENTS

	Page
<b>Beaver Dam (Black Shale Member)*</b>	1
<b>Big Stone Gap Member**</b>	2
<b>Black Shale</b>	3
<b>Brown Shale</b>	5
<b>Burket Shale Member*</b>	6
<b>Chattanooga Shale or Formation*</b>	7
<b>Cherry Valley Limestone</b>	8
<b>Completion Wells in Shales (Devonian): Well Samples &amp; Cores</b>	9
<b>Delaware Limestone*</b>	10
<b>Developments of Oil and Gas in Shale</b>	11
<b>Devonian Gas - Metamorphism Relations</b>	17
<b>Devonian Oil and Gas Potential</b>	18
<b>Devonian Shale - Gas Production</b>	20
<b>Dowelltown Member (Chattanooga)*</b>	22
<b>Dunkirk Shale Member*</b>	23
<b>Gas and Oil Reserves in the Devonian Shale</b>	24
<b>Gassaway Member (Chattanooga)*</b>	25
<b>Genesee Formation*</b>	26
<b>Genesee Shale Member (Black Shale)*</b>	27
<b>Hamilton Group</b>	28
<b>Hydraulic Fracturing of Brown Shales, Natural Fractures</b>	29
<b>Java Formation</b>	31
<b>Marcellus Shale</b>	32
<b>Maury Shale Member (Chattanooga Shale)*</b>	33

---

\*Refers to index source, Keroher, Grace C., et al. Lexicon of Geologic Names of the United States for 1936-1960. U.S. Government Printing Office, Washington, DC, 1966.

Middlesex Shale Member*	34
Millboro Shale*	35
Mineral Analyses from Shales	36
New Albany Shale	37
Oatka Shale (Oatka Creek Shale)*	38
Ohio Shale	39
Oil and Gas Analyses from Devonian Shales	42
Oil Shales	43
Olentangy Shale	45
Onondaga Formation	46
Onondaga Limestone*	47
Organic Materials of the Devonian Shale	48
Perrysburg Formation*	49
Petersville Shale*	50
Pipe Creek Shale Member*	51
Portage Group	52
Pressure-Depth Relations and Bottom-Hole Pressures of Wells in the Devonian Shale	53
Production from Wells in Shales (Devonian)	54
Production History of Devonian Shale	55
Renwick Shale Member*	57
Resources in Brown Shales	58
Rhinestreet Shale Member*	62
Senec Limestone	63
Stratigraphic Correlations, Logging Cross-Sections, Stratigraphy	64

<b>Sunbury*</b>	<b>75</b>
<b>Tioga Bentonite Bed*</b>	<b>76</b>
<b>Traverse Group of Michigan Basin</b>	<b>77</b>
<b>Union Springs Shale Member*</b>	<b>78</b>

**BEAVER DAM (BLACK SHALE MEMBER)\***

1. Willard, B. in B. Willard, F. M. Swartz, and A. B. Cleaves, Pa. Geol. Survey, Ser. 4, Bull. G-19, 1939, pp. 141, 153.
2. Swain, F. M. Am. Assoc. Petrol. Geol. Bull., v. 42, No. 12, 1958, p. 2867.

\*Titles for articles were not given in the indexing source.

**BIG STONE GAP MEMBER\***

1. **Stose, G. W.** Va. Geol. Survey Bull. 24, 1923.
2. **Swartz, J. H.** Sci., n.s., v. 64, 1926, p. 226.
3. **Swartz, J. H.** Am. J. Sci, 5th, v. 14, 1927, p. 498.
4. **Cooper, B. N.** Va. Geol. Survey Bull. 60, 1944, pp. 143-144.
5. **Harris, L. D. and R. L. Miller.** U. S. Geol. Quad. Map GQ-111, 1958.

\*Titles for articles were not given in indexing source.

**BLACK SHALE**

1. Andrews, E. B. Report on Economical Geology of Southern Ohio, Traversed by the Marietta and Cincinnati Railroad, Including the Portsmouth Branch. Gazette Steam Printing House, Cincinnati, Ohio, 1865.
2. Andrews, E. B. Report of Progress in the Second District. Ohio Geol. Survey Report Progress 1869, 1869, pp. 55-142.
3. Romenger, C. Black Shales of Michigan. Mich. Geol. Survey, v. 3, 1873-1876, pp. 66-67.
4. Andrews, E. B. Proposed Corrections for a Part of the Geological Atlas, 1879, of Ohio. Am. J. Sci. (3), v. 18, 1879, p. 410.
5. Orton, E. et al. Report of the Geological Survey of Ohio, Economic Geology. Ohio Geol. Survey, v. 6, 1888, 831 pp.
6. Brown, J. C. Deposits on Pipes and other Channels Conveying Potable Water. Inst. Civil Eng. Proc., v. 156, pt. 2, 1904, pp. 1-17.
7. Ashley, G. H. Oil Resources of Black Shales of the Eastern United States. U. S. G. S. Bull. 641, 1917, pp. 311-324; abstracts in Wash. Acad. Sci. J., v. 7, pp. 564-565.
8. Crouse, C. S. An Economic Study of the Black Devonian Shales of Kentucky. Ky. Geol. Survey, v. 21, Series 6, 1925, pp. 58-97.
9. Lamborn, R. E. The Olentangy Shale in Southern Ohio. J. Geol., v. 35, 1927, pp. 708-722.
10. Pohl, E. R. The Black Shale Series of Central Tennessee. Am. J. Sci. (5), v. 20, 1930, pp. 151-152.
11. Beers, R. F. Radioactivity and Organic Content of Some Paleozoic Shales. Am. Assoc. Petrol. Geol. Bull. v. 29, 1945, pp. 1-22.
12. Gutshick, R. C. Origin of Some Bitumen in the Devonian - Mississippian Black Shales and the Eocene Green River Shale. Geol. Soc. Am. Bull., v. 58, 1947, p. 1185.
13. Haas, W. H. The Chattanooga Shale Type Area (Tennessee) (Abstracts). Geol. Soc. Am. Bull., v. 58, 1947, p. 1189.
14. Ostrom, M. E., M. E. Hopkins, W. A. White, and L. D. McVicker. Uranium in Illinois Black Shales. Ill. St. Geol. Survey Circ. 203, 1955.

**BLACK SHALE (Continued)**

15. Conrad, S. G., R. T. Elmore, Jr. and S. W. Maher. Stratigraphy of the Chattanooga Black Shales in the Flynn Creek Structure, Jackson County, Tennessee. Tenn. Acad. Sci. J., v. 32, No. 1, Jan. 1957, pp. 9-18.
16. Stockdale, P. B. and H. J. Klepser. The Chatanooga Shale of Tennessee as a Source of Uranium - Final Report. U. S. Atomic Energy Comm. Report ORO-205, 1959, 223 p.
17. Swanson, V. E. Oil Yield and Uranium Content of Black Shales. U. S. G. S. Prof. Paper 356-A, 1960, pp. 1-44.
18. Smith, J. W. and N. B. Young. Specific Gravity to Oil - Yield Relationships for Black Shales of Kentucky's New Albany Formation. BuMines RI6531, 1964.
19. Vine, J. D. and E. B. Tourtelot. Geochemical Investigations of Some Black Shales and Associated Rocks. U. S. G. S. Bull. 1314A, 1969, pp. A1-A43.
20. Vine, J. D. and E. B. Tourtelot. Geochemistry of Black Shale Deposits - A Summary Report. Econ. Geol., v. 65, No. 3, 1970, pp. 253-272.

**BROWN SHALE**

1. Appalachian Geol. Soc. Oriskany Sand and Devonian Shale, Appalachian Area, in Oriskany Sand Symposium. Charleston, WV, 1937.

**BURKET SHALE MEMBER\***

1. Butts, C. Am. J. Sci., Ser. 4, v. 46, 1918, pp. 523, 536.
2. Willard, B. Geol. Soc. Am. Bull., v. 46, 1935, pp. 1209-1213.
3. Willard, B. Pa. Geol. Survey, Ser. 4, Bull. G-19, 1939, pp. 201, 218-219.
4. Woodward, H. P. Devonian System of West Virginia. W. Va. Geol. & Econ. Survey, v. 15, 1943, pp. 409, 411.
5. Arndt, H. H., et al. Geol. Soc. Am. Guidebook Pittsburg Mtg., 1959, p. 3.
6. Butts, C. U. S. Geol. Survey Hollidaysburg-Huntingdon Folio No. 227.

\*Titles for articles were not given in indexing source.

## CHATTANOOGA SHALE OR FORMATION\*

1. Hayes, C. W. Geol. Soc. Am. Bull., v. 2, 1891, p. 143.
2. Swartz, J. H. Am. J. Sci., 5th Ser., v. 7, No. 37, 1924, pp. 24-30.
3. Swartz, J. H. Am. J. Sci., 5th Ser., v. 14, No. 84, 1927, pp. 485-499.
4. Born, K. E. and H. B. Burwell. Tenn. Div. Geol. Bull. 47, 1939, pp. 48-49.
5. Cooper, G. A., et al. Geol Soc. Am. Bull., v. 53, No. 12, Part 1, 1942, p. 1752-1753.
6. Woodward, H. P. Devonian System of West Virginia. W. Va. Geol. & Econ. Survey, v. 15, 1943, pp. 247, 248, 250, 252.
7. Campbell, G. Geol. Soc. Am. Bull., v. 57, No. 9, 1946, pp. 880-895.
8. Hass, W. H. Geol. Soc. Am. Bull., v. 58, No. 12, Part 2, 1947, p. 1189 (Abstract).
9. Huffman, G. G. Am. Assoc. Petrol. Geol. bull., v. 37, No. 2, 1953, p. 448.
10. Miser, H. D., et al. Geologic Map of Oklahoma. U. S. Geol. Survey, 1954.
11. Hass, W. H. U. S. Geol. Prof. Paper 286, 1956, pp. 2-23.
12. Malmborg, G. T. and H. T. Downing. Ala. Geol. Survey County Rept. 3, 1957, pp. 30-33.
13. Huffman, G. G., et al. Ok. Geol. Survey Bull. 77, 1958, pp. 14, 38-40.
14. Huffman, G. G. and J. M. Starke, Jr. Ok. Geol. Notes, v. 20, No. 7, 1960, pp. 159-163.
15. Cobb, J. C. and J. L. Kulp. Geol. Soc. Am. Bull., v. 71, No. 2, 1960, pp. 223-224.

\*Titles for articles were not given in the indexing source.

**CHERRY VALLEY LIMESTONE\***

1. Clarke, J. M. N. Y. St. Mus. Handbook 19, 1903.
2. Cooper, G. A. Wash. Acad. Sci. J., v. 31, No. 5, 1941, pp. 179-180.
3. Rickard, L. V. Am. J. Sci., v. 250, No. 7, 1952, pp. 511-522.

\*Titles for articles were not given in the indexing source.

## COMPLETION WELLS IN SHALES (DEVONIAN): WELL SAMPLES &amp; CORES

1. Jones, D. J. Index of Published Well Records of Kentucky Geological Survey. Ky. Geol. Survey Bull., No. 2, Series 9, 1949, 84 p.
2. Price, L. W., et al. Summary of Operations, Oil and Gas Fields in Michigan, 1959. Mich. Geol. Survey, 1959.
3. Wagner, W. R. Catalogue of Deep Well Samples and Geophysical Logs to January 1, 1959. I.C. 16, 1959, 84 p.
4. Ray, E. O. Resume of Drilling Activities in Eastern Kentucky in 1960. Ky. Geol. Survey Spec. Pub. 4, Series 10, 1961, pp. 60-63.
5. Calvert, W. L. Summary of Oil and Gas Activity in Ohio During 1962. Ohio Geol. Survey RI 47, 1963, 125 p.
6. Cate, A. S. "Lithostratigraphy of Some Middle and Upper Devonian Rocks in the Subsurface of Southwestern Pennsylvania," in Symposium on Middle and Upper Devonian Stratigraphy of Pennsylvania and Adjacent States. Pa. Geol. Survey, 4th Series, Bull. G-39, 1963, pp. 229-240.
7. Englund, K. J., J. B. Roen, and A. O. Delaney. Geology of the Middlesboro North-Quadrangle, Kentucky. U. S. Geol. Survey, Quad Map GQ-300, 1964.
8. Burwell, H. B. Well Sample Descriptions and Driller's Logs, Morgan County, Tennessee. Tenn. Div. Geology RI 20, 1967, 175 p.
9. Burwell, H. B. Well Sample Descriptions and Driller's Logs, Scott County, Tennessee, Tenn. Div. Geol. RI 21, 1967, 201 p.
10. Schwalb, H. R. and J. G. Smith. Catalog of Well Samples and Cores on File at Kentucky Geological Survey. Ky. Geol. Survey, Ser. 10, IC 19, 1970, 182 p.

## DELAWARE LIMESTONE\*

1. Winchell, N. H. Ohio Geol. Survey, v. 2, 1874, pp. 290-302.
2. Orton, E. Ohio Geol. Survey, v. 3, 1878.
3. Cooper, G. A., et al. Geol. Soc. Am. Bull., v. 53, No. 12, Part 1, 1942, p. 1754.
4. Woodward, H. P. Devonian System of West Virginia W. Va. Geol. & Econ. Survey, v. 15, 1943, pp. 329, 355, 357, 358, 359, 360, 535.
5. Stewart, G. A. Ohio J. Sci., v. 55, No. 3, 1955, p. 147-180.

\*Titles for articles were not given in the indexing source.

## DEVELOPMENTS OF OIL AND GAS IN SHALES

1. Jillson, W. R. New Oil Pools in Kentucky. Ky. Geol. Survey, ser. 6, v. 12, 1926.
2. Jillson, W. R. The Oil and Gas in the Bluegrass Region in Kentucky. Ky. Geol. Survey, ser. 6, v. 40, 1931.
3. Krumin, P. O. Review of the Estonian Oil Shale Industry, with a Brief Account of Oil Shale Development in the United States. Ohio St. Univ. Studies, Eng. Series, v. 18, No. 6, 1949, 125 pp.
4. Fettke, C. R. Oil & Gas Developments in the Appalachian Basin, Past and Present. Mines Mag., v. 42, No. 11, Nov. 1952, pp. 69-83; reprinted in Pa Geol. Survey, 4th ser., Bull. M-37, 1953.
5. Hunter, C. D. Development of Natural Gas Fields of Eastern Kentucky. Petrol. Eng., May 1955, 4 pp.
6. Haught, O. L. Oil and Gas Report and Map of Marshall, Wetzel, and Tyler Counties, West Virginia. W. Va. Geol. Survey Bull., No. 12, 1955, 49 pp.
7. Haught, O. L. Oil and Gas Report and Map of Pleasants, Wood, Ritchie Counties, West Virginia. W. Va. Geol. Survey Bull., No. 11, 1955, 21 pp.
8. Walker, F. H., et al. Oil and Gas Developments in Kentucky in 1954. Bull. Am. Assoc. Petrol. Geol., v. 39, No. 6, 1955, pp. 837-845.
9. Haught, O. L. Oil and Gas Report and Map of Monongalia, Marion, and Taylor Counties, West Virginia. W. Va. Geol. Survey Bull., No. 13, May 1956, 51 p.
10. Walker, F. H. Oil and Gas Developments in Kentucky in 1955. Am. Assoc. Petrol. Geol. Bull., v. 40, No. 6, 1956, pp. 1108-1117.
11. Walker, F. H., et al. Oil and Gas Developments in Kentucky in 1956. Am. Assoc. Petrol. Geol. Bull., v. 41, No. 6, 1957, pp. 1037-1045.
12. Nosow, E. and E. O. Ray. Oil and Gas Developments in Kentucky in 1957. Am. Assoc. Petrol. Geol. Bull., v. 42, No. 6, 1958, pp. 1172-1179.
13. Ells, G. D. Michigan Oil - Gas Developments - 1958. Michigan Manufacture and Financial Record, May 1959, pp. 40, 76, 90.
14. Lytle, W. S. Oil and Gas Developments 1958. Producers Monthly, v. 24, No. 1, November 1959, pp. 14-16, 18, 19.
15. Haught, O. L. Oil and Gas in Southern West Virginia. W. Va. Geol. Survey Bull., No. 17, 1959, 34 p.

## DEVELOPMENTS OF OIL AND GAS IN SHALES (Continued)

16. Lytle, W. S., J. M. Bergsten, S. Addison and W. R. Wagner. Oil and Gas Developments in Pennsylvania in 1958. Pa. Geol. Survey, 4th ser., PR-155, 1959, 44 pp.
17. Nosow E. Oil and Gas Developments in Kentucky in 1958. Am. Assoc. Petrol. Geol. Bull., v. 43, No. 6, 1959, pp. 1173-1180.
18. Alkire, R. L., B. A. Floto, and A. W. Johnson. Oil and Gas Developments in Ohio in 1959. Am. Assoc. Petrol. Geol. Bull., v. 44, No. 6, June 1960, pp. 704-710.
19. Bell, A. H. and J. VanDerBerg. Developments in Illinois in 1959. Am. Assoc. Petrol. Geol. Bull., v. 44, No. 6, June 1960, pp. 717-725.
20. Carpenter, G. L. and H. Smith. Developments in Indiana in 1959. Am. Assoc. Petrol. Geol. Bull., v. 44, No. 6, June 1960, pp. 726-729.
21. Ives, R. E. and G. D. Ellis. Developments in Michigan in 1959. Am. Assoc. Petrol. Geol. Bull., v. 44, No. 6, June 1960, pp. 730-741.
22. Kreidler, W. L. 1959 Gas and Oil Developments in New York State. Am. Assoc. Petrol. Geol. Bull., v. 44, No. 6, June 1960, pp. 683-687.
23. Lytle, W. S. Developments in Pennsylvania in 1959. Am. Assoc. Petrol. Geol. Bull., v. 44, No. 6, June 1960, pp. 688-703.
24. Milhous, H. C. Oil and Gas Developments in Tennessee in 1959. Am. Assoc. Petrol. Geol. Bull., v. 44, No. 6, June 1960, pp. 715-716.
25. Tucker, R. C. Oil and Gas Developments in West Virginia in 1959. Am. Assoc. Petrol. Geol. Bull., v. 44, No. 6, June 1960, pp. 711-714.
26. Davison, K. and R. L. Shick. How to get a Million Dollars from an Abandoned Oil Lease (Illinois). Oil & Gas J., v. 58, No. 6, 1960, pp. 94-98,100.
27. Nosow, E. Oil and Gas Developments in Kentucky in 1959. Am. Assoc. Petrol. Geol. Bull., v. 44, No. 6, 1960, pp. 963-968.
28. Alkire, R. L., B. A. Floto, and A. W. Johnson. Oil and Gas Developments in Ohio in 1960. Am. Assoc. Petrol. Geol. Bull., v. 45, No. 6, June 1961, pp. 749-756.
29. Bell, A. H. and J. VanDerBerg. Developments in Illinois in 1960. Am. Assoc. Petrol. Geol., v. 45, No. 6, June 1961, pp. 769-777.

## DEVELOPMENTS OF OIL AND GAS IN SHALES (Continued)

30. Carpenter, G. L. and H. Smith. Developments in Indiana in 1960. Am. Assoc. Petrol. Geol., v. 45, No. 6, June 1961, pp. 778-781.
31. Ives, R. E. and G. D. Ells. Developments in Michigan. Am. Assoc. Petrol. Geol. Bull., v. 45, No. 6, June 1961, pp. 782-794.
32. Lytle, W. S. Developments in Pennsylvania 1960. Am. Assoc. Petrol. Geol. Bull., v. 45, No. 6, June 1961, pp. 734-748.
33. Milhous, H. D. Oil and Gas Developments in Tennessee in 1960. Am. Assoc. Petrol. Geol. Bull., v. 45, No. 6, June 1961, pp. 767-768.
34. Nosow, E. Oil and Gas Developments in Kentucky in 1960. Am. Assoc. Petrol. Geol. Bull., v. 45, No. 6, June 1961, pp. 761-766.
35. Tucker, R. C. Oil and Gas Developments in West Virginia in 1960. Am. Assoc. Petrol. Geol. Bull., v. 45, No. 6, June 1961, pp. 757-760.
36. Overby, W. K., Jr. Oil and Gas Report on Jackson, Mason, and Putnam Counties, West Virginia. W. Va. Geol. & Econ. Survey Bull. 23, 1961, 26 p.
37. Alkire, R. L., B. A. Floto, and A. W. Johnson. Oil and Gas Developments in Ohio in 1961. Am. Assoc. Petrol. Geol. Bull., v. 46, No. 6, June 1962, pp. 796-803.
38. Beil, A. H. and J. VanDerBerg. Oil and Gas Developments in Illinois in 1961. Am. Assoc. Petrol. Geol. Bull., v. 46, No. 6, June 1962, pp. 815-824.
39. Carpenter, G. L. and H. Smith. Oil and Gas Developments in Indiana in 1961. Am. Assoc. Petrol. Geol. Bull., v. 46, No. 6, June 1962, pp. 825-828.
40. Ives, R. E. and G. D. Ells. Developments in Michigan in 1961. Am. Assoc. Petrol. Geol. Bull., v. 46, No. 6, June 1962, pp. 829-841.
41. Ives, R. E. and G. D. Ells. Developments in Michigan in 1961. Am. Assoc. Petrol. Geol. Bull., v. 46, No. 6, June 1962, pp. 829-841.
42. Lytle, W. S. Oil and Gas Developments in Pennsylvania in 1961. Topographic and Geologic Survey Progress Report 160, 1962.
43. Nosow, E. Oil and Gas Developments in Kentucky in 1961. Am. Assoc. Petrol. Geol. Bull., v. 46, No. 6, 1962, pp. 808-812.

## DEVELOPMENTS OF OIL AND GAS IN SHALES (Continued)

44. Taylor, N. W. New Oil and Gas Pays from Old Appalachian Horizons. Mines Mag., v. 52, No. 11, 1962, pp. 20-28.
45. Weaver, O. D. Revival of the Appalachians. Oil & Gas J., v. 60, No. 8, 1962, pp. 88-97.
46. Alkire, R. L., W. L. Calvert, and A. W. Johnson. Developments in Ohio in 1962. Am. Assoc. Petrol. Geol. Bull., v. 47, No. 6, June 1963, pp. 956-963.
47. Bell, A. H. and J. VanNberg. Developments in Illinois in 1962. Am. Assoc. Petrol. Geol. Bull., v. 47, No. 6, June 1963, pp. 974-987.
48. Carpenter, G. L. Developments in Indiana in 1962. Am. Assoc. Petrol. Geol. Bull., v. 47, No. 6, June 1963, pp. 988-994.
49. Ives, R. E. and G. D. Ellis. Developments in Michigan in 1962. Am. Assoc. Petrol. Geol. Bull., v. 47, No. 6, June 1963, pp. 995-1006.
50. Tucker, R. C. Developments in West Virginia in 1962. Am. Assoc. Petrol. Geol. Bull., v. 47, No. 6, June 1963, pp. 964-967.
51. Barnes, J. M. Kentucky's Hopkins County Has Drilling Spree. Oil and Gas J., v. 61, No. 44, 1963, pp. 180-181.
52. Calvert, W. L. Summary of Oil and Gas Activity in Ohio during 1962. Ohio Div. Geol. Survey Rept. 1963.
53. Lytle, W. S. Oil and Gas Developments in Pennsylvania in 1962. Topographic and Geologic Survey Progress Report 165, 1963.
54. Nosow, E. Oil and Gas Developments in Kentucky in 1962. Am. Association Petrol. Geol. Bull., v. 47, No. 6, 1963, pp. 968-971.
55. Overbey, W. K., Jr. "Oil and Gas Research," in West Virginia Geological and Economic Survey - Its Accomplishments and Outlook. W. Va. Geol. & Econ. Survey, v. 23, 1963, pt. 81-102.
56. Seifert, W. H. & W. S. Lytle. Oil and Gas Developments in the Youngsville - Sugar Grove Field of Warren County, Pennsylvania. Pa. Geol. Survey, 4th Series, PR 162, 1963, 13 p.
57. Carpenter, G. L. Developments in Indiana. Am. Assoc. Petrol. Geol. Bull., v. 48, No. 6, June 1964, pp. 829-835.

## DEVELOPMENTS OF OIL AND GAS IN SHALES (Continued)

58. Ives, R. E. and G. D. Ellis. Developments in Michigan in 1963. Am. Assoc. Petrol. Geol. Bull., v. 48, No. 6, June 1964, pp. 836-845.
59. Milhouse, H. C. Gas and Oil Developments in Tennessee. Am. Assoc. Petrol. Geol. Bull., v. 48, No. 6, June 1964, pp. 818-819.
60. Tucker, R. C. Gas and Oil Developments in Kentucky. Am. Assoc. Petrol. Geol. Bull., v. 48, No. 6, June 1964, pp. 820-828.
61. VanDerBerg, J. and L. L. Whiting. Developments in Illinois. Am. Assoc. Petrol. Geol. Bull., v. 48, No. 6, June 1964, pp. 820-828.
62. Calvert, W. L. Ohio's Petroleum Development and Geological Occurrence (Abstracts). Tulsa Geol. Soc. Digest, v. 32, 1964, pp. 174-175.
63. Calvert, W. L., A. W. Johnson, and R. L. Alkire. Ohio Oil and Gas Developments during 1963. Am. Assoc. Petrol. Geol. Bull., v. 48, No. 6, June 1964, pp. 801-808.
64. Carpenter, G. L. Oil and Development and Production in Indiana during 1963. Ind. Geol. Survey Mineral Econ., Ser. 10, 1964, 19 p.
65. Haught, O. L. Oil and Gas Report on Braxton and Clay Counties, West Virginia. W. Va. Geol. & Econ. Survey Bull. 29, 1964, 19 p.
66. Haught, O. L. West Virginia's Oil and Gas - Lubricants and Fuels. W. Va. Geol. & Econ. Survey Bull. 26, 1964, 39 p.
67. Haught, O. L. and W. K. Overbey, Jr. Map of Braxton and Clay Counties Showing Oil and Gas Fields, Structural Contours on Top of Greenbrier Limestone. W. Va. Geol. & Econ Survey, 1964.
68. Price, L. W., W. G. Smiley, R. M. Acker, and R. E. Ives, et al. Michigan's Oil and Gas Fields, 1963. Mich. Geol. Survey An. Stat. Summary 1, 1964, 57 p.
69. Weaver, O. D. Tennessee Could Share in Appalachian Basin Revival. Oil & Gas J., v. 62, No. 37, 1964, pp. 174-177, 179.
70. Carpenter, G. L. Oil Development and Production in Indiana During 1964. Ind. Geol. Survey Mineral Econ. Ser. 11, 1965, 20 p.

## DEVELOPMENTS OF OIL AND GAS IN SHALES (Continued)

71. Haught, O. L. Oil and Gas Report on Barbour and Upshur Counties, West Virginia. W. Va. Geol. & Econ. Survey Bull. 31, 1965, 15 p.
72. Haught, O. L. Map of Barbour and Upshur Counties Showing Oil and Gas Field, Structural Contours on Top of Greenbrier Limestone. W. Va. Geol. & Econ. Survey, 1965.
73. Jillson, W. R. The Geology of Casey County, Kentucky. Roberts Printing Co., Frankfort, Ky., 1965, 108 p.
74. McGlade, W. G. Current Activities in Pennsylvania Oil and Gas Fields. Interstate Oil Compact Comm. Bull., v. 7, No. 1, 1965, pp. 37-44.
75. Norling, D. L., T. A. DeBrosse and W. J. Buschman, Jr. Summary of Oil and Gas Activity in Ohio during 1964. Ohio Div. Geol. Survey RI 56, 1965, 139 p.
76. Rose, W. D. "Highlights of Western Kentucky Oil and Gas Exploration in 1963 and Early 1964," in Kentucky Oil and Gas Assoc. 28th An. Meeting 1964, Tech. Sess. Proc., 1965; Ky. Geol. Survey, Ser. 10, Spec Pub. 10, 1965, pp. 41-52.
77. Rose, W. D. Kentucky Drillers Probe Deep. Oil & Gas J., v. 63, No. 34, 1965, pp. 140-145.
78. Latimer, I. S., Jr. Oil and Gas Developments in West Virginia in 1966. W. Va. Geol. Survey Newsletter, 10th Issue, 1967, pp. 3-5.
79. Lytle, W. S., L. Heyman, and W. R. Wagner. Oil and Gas Developments in Pennsylvania in 1966. Pa. Geol. Survey., 4th Ser., PR 173 1967, 51 p.
80. Carpenter, G. L., et al. Developments in East-Central States in 1970. Am. Assoc. Petrol Geol. Bull. 5507, 1971, pp. 1016-1024.
81. Lytle, W. S., et al. Oil and Gas Developments in Maryland, Ohio, Pennsylvania, Virginia, and West Virginia. Am. Assoc. Petrol. Geol. Bull. 5708, 1973, pp. 1548.
82. Bownocker. Occurrence and Exploitation of Petroleum and Natural Gas. Ohio Geol. Survey, Bull. 1, pp. 17-325.
83. Shultz, E. B., Jr. Methane, Ethane, and Propane from American Oil Shales by Hydrogasification: Green River Formation Shale and Shales of the Eastern United States and New Brunswick. Chemical Eng. Prog. Symp., Ser. 54, v. 61, 196\_, pp. 48-59.

## DEVONIAN GAS - METAMORPHISM RELATIONS

1. Newell, W. L. and D. V. Wise. Independent Joint System Superimposed on Metamorphic Fabric of Glenarm Series Near Coatesville, Pennsylvania. Pa. Acad. Sci. Proc., v. 38, No. 2, 1965, pp. 150-153.
2. Grow, G. C., Jr. Gas Production Near Hard Coal Areas of Pennsylvania. World Oil, v. 159, No. 4, 1964, pp. 79-81.

## DEVONIAN OIL AND GAS POTENTIAL

1. Andrews, E. B. Report on Economical Geology of Southern Ohio, Traversed by the Marietta and Cincinnati Railroad including the Portsmouth Branch. Gazette Steam Printing House, Cincinnati, Ohio, 1865.
2. Winchester, D. E. The Oil Possibilities of the Oil Shales of the U. S. Federal Oil Consrv. Bd., Washington, D. C., Appendix I, Rept. II, January 1928; reported in Guthrie, B., USBuMines Bull. 415, pp. 3-5.
3. Frost, I. C. and K. E. Stanfield. Estimating Oil Yield of Oil Shale from Its Specific Gravity. Anal. Chem., v. 22, March 1950, pp. 491-492.
4. Ball, M. W., ed. Possible Future Petroleum Provinces of North America. Am. Assoc. Petrol. Bull., v. 35, No. 2, February 1951, pp. 438-457.
5. Haught, O. L. Lithologic Factors Affecting Prospects for Early Paleozoic Oil and Gas in West Virginia. Am. Assoc. Petrol. Geol. Bull., v. 37, No. 3, March 1953, pp. 553-560.
6. Brubeck, W. E. What Are the Opportunities in the Illinois Basin? World Oil, v. 136, No. 6, May 1953, pp. 111-112, 114.
7. Kreidler, W. L. History, Geology, and Future Possibilities of Gas and Oil in New York State. New York St. Museum Circ. 33, 1953.
8. Linn, E. H. Devonian Oil and Gas Possibilities in Central Pennsylvania. Am. Petrol. Inst., Div. Prod. Paper 826-24-A, 1953, 10 p.
9. Daly, J. W. The Devonian Problem (Abstracts). Oil & Gas J., v. 53, No. 27, November 8, 1954, p. 148; Geophysics, v. 20, No. 1, January 1955, p. 188.
10. Woodward, H. P. Problems of Deep Appalachian Basin. Petrol. Eng., v. 27, No. 3, March 1955, pp. B50-B56, B58.
11. Woodward, H. P. What is the Geological Potential for Deep Drilling in the Appalachian Region? Oil Forum, v. 9, No. 4, April 1955, pp. 118-120.
12. Haught, O. L. Oil and Gas Report of Marshall, Wetzel, and Tyler Counties, West Virginia. W. Va. Geol. Bull., No. 12, 1955, 49 p.
13. Haught, O. L. Oil and Gas Report of Pleasants, Wood, and Ritchie Counties, West Virginia. W. Va. Geol. Survey Bull., No. 11, 1955, 21 p.

## DEVONIAN OIL AND GAS POTENTIAL (Continued)

14. Haught, O. L. Oil and Gas Report and Maps of Monongalia, Marion and Taylor Counties, West Virginia. W. Va. Geol. Survey Bull. No. 13, May 1956, 51 pp.
15. Lytle, W. S. History, Present Status and Future Possibilities of Secondary Recovery Operations in Pennsylvania. Bull. Interstate Oil Compact Comm. Committees, v. 1, No. 2, December 1959, pp. 28-42.
16. Haught, O. L. Oil and Gas in Southern West Virginia. W. Va. Geol. Survey Bull., No. 17, 1959, 34 p.
17. Davison, K. and R. L. Shick. How to Get a Million Dollars from an Abandoned Oil Lease (Illinois). Oil & Gas J., v. 58, No. 6, February 1960, pp. 94-98, 100.
18. Ingram, A. I. Oil and Gas Frontiers in the East (United States). Geoltimes, v. 4, No. 6, March 1960, pp. 14-16, 33, 34.
19. Rudman, A. J. A Seismic Reflection Survey of the Surface of the Basement Complex in Indiana. Ind. Geol. Survey, PR 18, April 1960, 26 p.
20. Overbey, W. K., Jr. Oil and Gas Report on Jackson, Mason and Putnam Counties, West Virginia. W. Va. Geol. & Econ. Survey Bull., No. 23, 1961, 26 p.
21. Weaver, O. D. Revival of the Appalachians. Oil & Gas J., v. 60, No. 8, 1962, pp. 88-97.
22. Whiting, L. L. and D. L. Stevenson. The Sangamon Arch. Ill. Geol. Survey Circ. 383, 1965, 20 p.

## DEVONIAN SHALE - GAS PRODUCTION

1. Prosser, C. S. The Devonian and Mississippian Formations of Northeastern Ohio. Geol. Survey of Ohio, 4th Series, Bull. 15, 1912, 574 pp.
2. Barrell, J. The Upper Devonian Delta of the Appalachian Geosyncline. Am. J. Sci. (4), v. 36, 1913, pp. 429-472; v. 37, 1914, pp. 87-109, 225-253.
3. Willard, B. The Devonian of Pennsylvania. Pa. Geol. Survey, 4th Ser., Bull. G-19, 1939, 481 pp.
4. Bayles, R. E. Subsurface Upper Devonian Sections in Southwestern Pennsylvania. Am. Assoc. Petrol. Geol. Bull., v. 33, 1949, pp. 1682-1703.
5. Haught, O. L. Devonian Shale Gas in West Virginia. Am. Petrol. Inst., Div. Production, Dallas, Texas, 1958, 4 p.
6. Hoover, K. V. Devonian - Mississippian Shale Sequence in Ohio. Ohio Geol. Survey, IC No. 27, 1960.
7. Grow, G. C., Jr. Gas Production Near Hard Coal Areas of Pennsylvania. World Oil, v. 159, No. 4, 1964, pp. 79-81.
8. Hennessy, G. J. Oil Exploration in Hopkins County, Kentucky, Relative to the Hanson Oil Pool, in Kentucky. Oil & Gas Assoc. 26th-27th An. Meetings, 1962-63, Tech. Session Proc. Ky. Geol. Survey, Ser. 10, Spec. Pub. 8, 1964, pp. 49-56.
9. Price, L. W., W. G. Smiley, R. M. Acker, and R. E. Ives, et al. Michigan's Oil and Gas Fields. Mich. Geol. Survey An. Stat. Summary 1, 1964, 57 pp.
10. Smith, J. W. and K. E. Stanfield. Oil Yields of Devonian New Albany Shales, Kentucky. Am. Assoc. Petrol. Geol. Bull., v. 48, No. 5, 1964, pp. 712-714.
11. Michigan Geol. Survey. Michigan's Oil and Gas Fields, 1964. Mich. Geol. Survey An. Stat. Summary 2, 1965, 59 pp.
12. Norling, D. L., T. A. DeBrosse, and W. J. Buschman, Jr. Summary of Oil and Gas Activity in Ohio during 1964. Ohio Div. Geol. Survey RI 56, 1965, 139 pp.
13. Rose, W. D. Highlights of Western Kentucky Oil and Gas Exploration in 1963 and Early 1964, in Kentucky. Oil & Gas Assoc. 28th An. Meeting, 1964, Tech. Session Proc. Ky. Geol. Survey, Ser. 10, Spec. Pub. 10, 1965, pp. 41-52.
14. Rose, W. D. Kentucky Drillers Probe Deep. Oil & Gas J., v. 63, No. 34, 1965, pp. 140-145.

## DEVONIAN SHALE - GAS PRODUCTION (Continued)

15. Whiting, L. L. and D. L. Stevenson. The Sanyamon Arch. Ill. Geol. Survey Circ. 383, 1965, 20 p.
16. Howell, P. Sources of Information Useful in Searching for Oil and Gas in Kentucky, Featuring a Selected Bibliography with Sepcial Indexs. Ky. Dept. Commerce, Frankfort, Ky., 1966, 180 p.
17. Jillson, W. R. The Geology of Henry County, Kentucky - An Outline Designed with Special Reference to Lead and Zinc Mining and Oil and Gas Exploration. Roberts Printing Co., Frankfort, Ky., 1967, 163 p.
18. Walker, F. H. Oil and Gas Map of Letcher County, Kentucky. Ky. Geol. Survey, Ser. 10, 1967.
19. Newberry. Devonian in Cuyahoga County, Ohio. Geol. of Ohio, v. 1, Pt. 1, pp. 190-200.

## DOWELLTOWN MEMBER (CHATTANOOGA)\*

1. Campbell, G. Geol. Soc. Am. Bull., v. 57, Nb. 9, 1946, pp. 883-885.
2. Conrad, S. G., R. T. Elmore and S. W. Maker. Geol. Soc. Am. Bull., v. 65, No. 12, Part 2, 1954, p. 1358.
3. Hass, W. H. U. S. Geol. Survey Prof. Paper 286, 1956, p. 12, 16-20.

\*Titles for articles were not given in indexing source.

## DUNKIRK SHALE MEMBER\*

1. Clarke, J. M. N. Y. St. Mus. Handbook 19, 1903, p. 24.
2. Luther, D. D. N. Y. St. Mus. Bull. 69, 1903, pp. 1019-1029.
3. Hartnagel, C. A. N. Y. St. Mus. Handbook 19, 1912, p. 78.
4. Chadwick, G. H. Geol. Soc. Am. Bull., v. 30, 1919, p. 157.
5. Chadwick, G. H. Geol. Soc. Am. Bull., v. 34, 1923, p. 69.
6. Chadwick, G. H. N. Y. St. Mus. Bull. 251, 1924, pp. 149-157.
7. Chadwick, G. H. Pan-Am. Geol., 1933, v. 60.
8. Woodward, H. P. Devonian System of West Virginia. W. Va. Geol. & Econ. Survey, v. 15, 1943, p. 492.

\*Titles for articles were not given in indexing source.

## GAS AND OIL RESERVES IN THE DEVONIAN SHALE

1. Jillson, W. R. Oil and Gas in Western Kentucky. Ky. Geol. Survey, Ser. 6, v. 39, 1930.
2. Brubeck, W. E. What Are the Opportunities in the Illinois Basin? World Oil, v. 136, No. 6, May 1953, pp. 111-112, 14.
3. Bayles, R. E., et al. Wood County Deep Well. W. Va. Geol. & Econ. Survey, RI 14, 1956.
4. Swann, D. H. and A. H. Bell. "Habitat of Oil in the Illinois Basin," in Weeks, L. G., ed., Habitat of Oil - A Symposium, June 1958, pp. 447-472.
5. Ingram, A. I. Oil and Gas Frontiers in the East (United States). Geotimes, v. 4, No. 6, March 1960, p. 14-16, 33, 34.
6. Haught, O. L. Oil and Gas Fields in West Virginia. W. Va. Geol. & Econ. Survey, 1963.
7. Weaver, O. D. Tennessee Could Share in Appalachian Basin Revival. Oil and Gas J., v. 62, No. 37, 1964, pp. 174-177, 179.
8. Ells, G. D. Michigan's Oil and Gas Pools. Mich. Geol. Survey RI 2, 1967, 49 p.
9. Dennison, J. M. Petroleum Related to Middle and Upper Devonian Deltaic Facies in Central Appalachians. Am. Assoc. Petrol. Geol. 5508, 1971, p. 1179.
10. Bolton, R. Antrim Beds May Hold Huge Reserves. Oil and Gas News, pp. 18, 19, 22.
11. Bownocker. Oil and Gas Producing Rocks in Ohio Geol. Survey Bull. 1, pp. 21-22.

GASSAWAY MEMBER (CHATTANOOGA)\*

1. Campbell, G. Geol. Soc. Am. Bull., v. 57, No. 9, 1946, pp. 881, 884, 886.
2. Maher, S. W. Geol. Soc. Am. Bull., v. 65, No. 12, pt. 2, 1954, p. 1363 (Abstracts).
3. Hass, W. H. U. S. Geol. Survey Prof. Paper 286, 1956, p. 20-23.

\*Titles for articles were not given in the indexing source.

## GENESEE FORMATION\*

1. Vanuxem, L. Geol. N. Y., Part 3, 1842, pp. 168-169.
2. Chadwick, G. H. Geol. Soc. Am. Bull., v. 46, No. 2, 1935, p. 352.
3. Bradley, W. H. and J. F. Pepper. U. S. Geol. Survey Bull 899-A, 1938.
4. Bates, R. L. Va. Geol. Survey Bull. 51-B, 1939, pp. 41, 62-63.
5. Woodward, H. P. Devonian System of West Virginia. W. Va. Geol. Econ. Survey, v. 15, 1943, p. 537.
6. Grossman, W. L. Geol. Soc. Am. Bull., v. 55, No. 1, 1944, pp. 41-76.
7. Cloas, E. Md. Dept. Geol., Mines & Water Resources, Washington County, Rept. 14, 1951, pp. 90, 99.
8. deWitt, W., Jr. and G. W. Colton. Am. Assoc. Petrol. Geol. Bull., v. 43, No. 12, 1959, pp. 2810-2828.
9. Hass, W. H. Geol. Soc. Am. Bull., v. 70, No. 12, Part 2, 1959, p. 1615 (Abstracts).

\*Titles for articles were not given in indexing source.

## GENESEE SHALE MEMBER (BLACK SHALE)\*

1. Clarke, J. M. and D. D. Luther. N. Y. St. Mus. Bull. 63, 1904.
2. Woodward, H. P. Devonian System of West Virginia. W. Va. Geol. and Econ. Survey, v. 15, 1943, pp. 247, 373, 389, 390, 408, 410, 411, 537.
3. Grossman, W. L. Geol. Soc. Am. Bull., v. 55, No. 1, 1944, p. 47.
4. deWitt, W., Jr. and G. W. Colton. Am. Assoc. Petrol. Geol. Bull., v. 43, No. 12, 1959, pp. 2814, 2815-18, 2820.
5. Hass, W. H. Geol. Soc. Am. Bull., v. 70, No. 12, Part 2, 1959, p. 1615.

\*Titles for articles were not given in indexing source.

## GENESEE FORMATION\*

1. Vanuxem, L. Geol. N. Y., Part 3, 1842, pp. 168-169.
2. Chadwick, G. H. Geol. Soc. Am. Bull., v. 46, No. 2, 1935, p. 352.
3. Bradley, W. H. and J. F. Pepper. U. S. Geol. Survey Bull 899-A, 1938.
4. Bates, R. L. Va. Geol. Survey Bull. 51-B, 1939, pp. 41, 62-63.
5. Woodward, H. P. Devonian System of West Virginia. W. Va. Geol. Econ. Survey, v. 15, 1943, p. 537.
6. Grossman, W. L. Geol. Soc. Am. Bull., v. 55, No. 1, 1944, pp. 41-76.
7. Cloas, E. Md. Dept. Geol., Mines & Water Resources, Washington County, Rept. 14, 1951, pp. 90, 99.
8. deWitt, W., Jr. and G. W. Colton. Am. Assoc. Petrol. Geol. Bull., v. 43, No. 12, 1959, pp. 2810-2828.
9. Haes, W. H. Geol. Soc. Am. Bull., v. 70, No. 12, Part 2, 1959, p. 1615 (Abstracts).

\*Titles for articles were not given in indexing source.

**GENESEE SHALE MEMBER (BLACK SHALE)\***

1. Clarke, J. M. and D. D. Luther. N. Y. St. Mus. Bull. 63, 1904.
2. Woodward, H. P. Devonian System of West Virginia. W. Va. Geol. and Econ. Survey, v. 15, 1943, pp. 247, 373, 389, 390, 408, 410, 411, 537.
3. Grossman, W. L. Geol. Soc. Am. Bull., v. 55, No. 1, 1944, p. 47.
4. deWitt, W., Jr. and G. W. Colton. Am. Assoc. Petrol. Geol. Bull., v. 43, No. 12, 1959, pp. 2814, 2815-18, 2820.
5. Hass, W. H. Geol. Soc. Am. Bull., v. 70, No. 12, Part 2, 1959, p. 1615.

\*Titles for articles were not given in indexing source.

## HAMILTON GROUP

1. Willard, B. Hamilton Group of Central Pennsylvania. Geol. Soc. Am. Bull., v. 46, 1935, pp. 195-224.

## HYDRAULIC FRACTURING OF BROWN SHALES, NATURAL FRACTURES

1. Clark, R. C. Hydraulic Fracturing of Oil and Gas Wells. *Oil & Gas J.*, v. 52, No. 19, 1953.
2. Clark, R. C. and J. J. Reynolds. Increasing Oil and Gas Production by Vertical Hydraulic Fracturing. *Oil & Gas J.*, v. 53, No. 14, 1954.
3. Crane, J. K. Hydraulic Fracturing in the State of Kentucky. *Ky. Geol. Survey, Spec. Pub. 6, Series 9*, 1954, pp. 21-27.
4. Hauck, C. J. Formation Fracture Operations in Ohio, Gas Supply, Transmission and Storage Conference. Am. Gas. Assoc., Operating Sect., Pittsburgh, Pa., May 9-10, 1955, 12 p.
5. Taylor, L. C. Vertical Fracturing. *Ky. Geol. Survey, Spec. Pub. 8, Series 9*, 1955, pp. 64-67.
6. Stegelman, A. Fracturing of Oil Bearing Strata in Proximity to Aquifers. *Ky. Geol. Survey, Spec. Pub. 8, Series 9*, 1955, pp. 20-27.
7. Moore, W. S. Fracturing Pays Off in Eastern United States. *Oil & Gas J.*, v. 57, No. 22, May 25, 1959, pp. 162-165, 166, 168.
8. Dunlap, I. R. Factors Controlling the Orientation and Direction of Hydraulic Fractures. *Inst. Petrol. J.*, v. 49, No. 477, 1963, pp. 289-294.
9. Goodwin, B. K. Structural Control of Wissachickon Creek in Philadelphia, Pennsylvania. *Pa. Acad. Sci. Proc.*, v. 37, 1963, pp. 304-308.
10. Warren, J. E. and P. J. Root. The Behavior of Naturally Fractured Reservoirs. *Soc. Petrol. Eng. J.*, v. 3, No. 3, 1963, pp. 245-255.
11. Drummond, J. M. An Appraisal of Fracture Porosity. *Bull. Can. Petrol. Geol.*, v. 12, No. 2, 1964, pp. 226-245.
12. Grossong, R. H. Systematic Joints Across a Syncline in the Valley and Ridge Province (Abstract). *Geol. Soc. Am. Spec. Paper 82*, 1965, p. 256.
13. Heise, H. A Method for Fracture Analysis. *Oilweek*, v. 16, No. 7, 1965, pp. 20-22.
14. Heise, H. Fraction (Fracture) Analysis Comes of Age. *Oilweek*, v. 16, No. 4, 1965, pp. 12, 14, 16.

## HYDRAULIC FRACTURING OF BROWN SHALES, NATURAL FRACTURES (CONTINUED)

15. Kelley, V. C. Relationships of Rock Fractures. J. Geol., v. 73, No. 4, 1965, pp. 668-669.
16. Newell, L. and D. V. Wise. Independent Joint System Superimposed on Metamorphic Fabric of Glenarm Series near Coatesville, Pa. Pa. Acad. Sci. Proc., v. 38, No. 2, 1965, pp. 150-153.
17. Ray, E. O. Shale Stimulation - A New Approach in Kentucky Oil and Gas Association 30th & 31st Annual Meetings 1966-67, Proc. Tech. Sess. Ky. Geol. Survey, Series 10, Spec. Pub. 15, 1968, pp. 35-42.
18. Overbey, W. K. and R. L. Rough. Surface Studies Predict Orientation of Induced Formation Fractures in Appalachian Area. Am. Petrol. Inst. Drilling & Production Practice 1968, 1969, pp. 101-106.

**JAVA FORMATION\***

1. de Witt, W., Jr. Am. Assoc. Petrol. Geol. Bull., v. 44, No. 12, 1960,  
pp. 1933-1939.

\*Titles for articles were not given in the indexing source.

## MARCELLUS SHALE

1. Whitfield, R. P. Notice of the Occurrence of Rock Representing the Marcellus Shale of New York in Central Ohio. Am. Assoc. Adv. Sci. Proc., v. 28, 1880, pp. 297-299.
2. Rich, J. L. Probable Deep Water Origin of Marcellus - Ohio - New Albany - Chattanooga Black Shale (Abstracts). Geol. Soc. Am. Bull., v. 59, 1948, pp. 1346-1347.
3. Schuchert, C. Atlas of Paleogeographic Maps of North America. John Wiley & Sons, Inc., New York, N. Y., 1955, 177 p.

## MAURY SHALE MEMBER (CHATTANOOGA SHALE)\*

1. Safford, J. M. and J. B. Killebrew. Elements of Geol. of Tenn., 1900. Pp. 104, 141, 143.
2. Drake, N. F. Tenn. Geol. Survey Res. of Tenn., v. 4, No. 3, 1914, p. 105.
3. Swartz, J. H. Am. J. Sci., 5th, v. 7, 1924, pp. 28, 30.
4. Born, K. E. and H. B. Burwell. Tenn. Div. Geol. Gull 47, 1939, p. 48.
5. Campbell, G. Geol. Soc. Am. Bull., v. 57, No. 9, 1946, pp. 895-900.
6. Hass, W. H. U. S. Geol. Survey Prof. Paper 286, 1906, pp. 23-26.

\*Titles for articles were not given in indexing source.

## MIDDLESEX SHALE MEMBER\*

1. Clarke, J. M. N. Y. St. Mus. Handbook 19, 1903, p. 23.
2. Luther, D. D. N. Y. St. Mus. Bull. 69, 1903, pp. 1000-1029.
3. Clarke, J. M. and D. D. Luther. N. Y. St. Mus. Bull., 1908, p. 118.
4. Caster, K. E. Geol. Soc. Am. Bull., v. 44, 1933, Part 1, pp. 201-202.
5. Chadwick, G. H. Geol. Soc. Am. Bull., v. 46, No. 2, 1935, p. 352.
6. Bradley, W. H. and J. F. Pepper. U. S. Geol. Survey Bull. 899-A, 1938, pp. 11-12.
7. Woodward, H. P. Devonian System of West Virginia. W. Va. Geol. & Econ. Survey, v. 15, 1943, pp. 408-410.
8. Colton, G. W. and W. deWitt, Jr. U. S. Geol. Survey Oil & Gas Inv. Chart IC-54, 1958.
9. Sutton, R. G. N. Y. St. Mus. Bull. 380, 1960, pp. 11-13.

\*Titles for articles were not given in indexing source.

## MILLBORO SHALE\*

1. Cooper, B. N. Va. Geol. Survey Bull. 55, 1939, pp. 42-44.
2. Butts, C. Va. Geol. Survey Bull. 52, Part 1, 1940, pp. 308-314.
3. Cooper, G. A. Geol. Soc. Am. Bull., v. 53, No. 12, Part 1, 1942, pp. 1736-1737.
4. Woodward, H. P. Devonian System of West Virginia. W. Va. Geol. & Econ. Survey, v. 15, 1943, pp. 252, 402, 412.
5. Lesure, F. G. Va. Polytech. Inst. Eng. Expt. Sta. Ser. 118, 1957, pp. 19, 20, 55-57.

\*Titles for articles were not given in indexing source.

## MINERAL ANALYSES FROM SHALES

1. Cox, B. B. Influence of Clay in Oil Production. *World Oil*, v. 131, No. 7, Dec. 1950, pp. 174, 176, 180-182.
2. Stockdale, P. B. and H. J. Klepser. The Chatanooga Shale of Tennessee as a Source of Uranium -- Final Report. U. S. Atomic Energy Comm. Rept. ORO-205, 1959, 223 p.
3. Swanson, V. E. Oil Yield of Uranium Content of Black Shales. U.S.G.S. Prof. Paper 356-A, 1960, pp. 1-44.
4. Hixon, S. B. Petrography of the Middle Devonian Bois Blanc Formation of Michigan and Ontario (Abstracts). *Dissertation Abs.*, v. 25, No. 6, 1964, pp. 3513-3514.
5. Whitney, P. R. The Rubidium-Strontium Geochronology of Argillaceous Sediments (Abstracts). *Mass. Inst. Tech. Abs. Thesis 1962-63*, 1964, pp. 230-231.
6. Rochon, R. W. Relationship of Mineral Composition of Shales to Density. *South Texas Geol. Soc. Bull.*, v. 7, No. 7, 1967, pp. 2-11.
7. Vine, J. D. and E. G. Tourtelot. Geochemical Investigations of Some Black Shales and Associated Rocks. *U.S.G.S. Bull.* 1314-A, 1969, pp. A1-A43.
8. Vine, J. D. and E. B. Tourtelot. Geochemistry of Black Shale Deposits - A Summary Report. *Econ. Geol.*, v. 65, No. 3, 1970, pp. 253-272.

## NEW ALBANY SHALE

1. Reeves, J. R. Preliminary Report on the Oil Shales of Indiana. Ind. Dept. Conserv. Pub. 21, pt. 6, 1922, pp. 1059-1105.
2. Reeves, J. R. A Section Through the New Albany Shale. Ind. Dept. Conserv., 4th An. Rept., 1923, pp. 18-21.
3. Arnold, C. A. Petrified Wood in the New Albany Shale. Science (New Ser.), v. 70, 1929, pp. 581-582.
4. Savage, T. E. Devonian Rock of Kentucky. Ky. Geol. Survey, Ser. 6, v. 33, 1930.
5. Bassler, R. S. Stratigraphy of Central Basin of Tennessee. Tenn. Div. Geol. Bull., No. 38, 1932, 268 p.
6. Campbell, G. New Albany Shale. Geol. Soc. Am. Bull., v. 57, 1946, pp. 829-908.
7. Campbell, G. New Albany Shale and Kinderhook Series in Indiana (Abstracts). Geol. Soc. Am. Bull., v. 67, No. 12, pt. 2, December 1956, p. 1679.
8. Smith, J. W. and K. E. Stanfield. Oil Yields of Devonian New Albany Shales. Ky. Am. Assoc. Petrol. Geol. Bull., v. 48, No. 5 1964, pp. 712-714.
9. Lineback, J. A. Stratigraphy of the New Albany Shale in South-Eastern Indiana (Abstracts). Geol. Soc. Am., Spec. Paper 76, 1967, pp. 102-103.
10. Smith, J. W. and K. E. Stanfield. Oil Yields of Devonian New Albany Shales, Kentucky. Am. Assoc. Geol. Bull., v. 48, No. 5, 1964, pp. 712-714.
11. Lineback, J. A. Stratigraphy and Depositional Environment of the New Albany Shale (Upper Devonian and Lower Mississippian) in Indiana (Abstracts). Dissertation Abs., v. 25, No. 11, 1965, p. 6538.
12. Lineback, J. A. Subdivisions and Depositional Environments of the New Albany Shale, Devonian - Mississippian in Indiana. Am. Assoc. Petrol. Geol. 5207, 1968, p. 1291
13. Boneham, R. F. Acritárcks in the New Albany Shale of Southern Indiana. Ind. Acad. Sci. Proc. 1969, v. 79, 1970, pp. 251-262.
14. Wigley, P. B. and R. E. Sergeant. Penecontemporaneous Sedimentary Structures in the Ravenna Facies of the New Albany Shale (Abstracts). Geol. Soc. Assoc. Abs. to Programs, v. 2, No. 3, 1970, pp. 248-249.

## OATKA SHALE (OATKA CREEK SHALE)\*

1. Cooper, G. A. Am. J. Sci., Ser. 5, v. 19, 1930, pp. 130-131+.

\*Titles for articles were not given in indexing source.

## OHIO SHALE

1. Andrews, E. B. Report of Progress in the Second Districts. Ohio Geol. Survey, Progress Report, 1869, pp. 55-142.
2. Andrews, E. B. Report of Progress in the Second Districts. Ohio Geol. Survey, Progress Report, 1870.
3. Newberry, J. S. On an Asphaltic Coal from the Shale of the Huron River, Ohio, Containing Sulfate of Baryta. Am. J. Sci. (3), v. 10, 1875, p. 303. Also in Anals. Lyceum Nat. Hist., N. Y., v. 11, 1876, pp. 105-106.
4. Andrews, E. B. Proposed Corrections for a Part of the Geological Atlas 1879, of Ohio. Am. J. Sci. (3), v. 18, 1879, p. 410.
5. Orton, E. Ohio Shale in Geological Series of Ohio. Preliminary Report on Petroleum and Inflammable Gas, 1886, pp. 23-24.
6. Orton, E. Berea Grit and Ohio Shale, as Sources of Gas. Preliminary Rept. on Petroleum and Inflammable Gas, 1887, pp. 176-178.
7. Orton, E. Ohio Shale as a Source of Oil and Gas. Preliminary Rept. on Petrol. and Inflammable Gas, 1887, pp. 90-96.
8. Orton, E., et al. Report on the Geological Survey of Ohio. Economic Geology. Ohio Geol. Survey, v. 6, 1888, 831 p.
9. Orton, E. First Annual Report on Geological Survey of Ohio (3rd Organization). The Westbute Co., Columbus, Ohio, 1890.
10. Orton, E. Ohio Shale. Geol. of Ohio, v. 6, 1890, pp. 23-24.
11. Bassler, R. S. The Stratigraphy of a Deep Well at Waverly, Ohio. Am. J. Sci. (4), v. 31, 1911, pp. 19-24.
12. Bassler, R. S. The Waverlyan Period of Tennessee. U. S. Nat. Mus. Proc., v. 41, 1911, pp. 209-224.
13. Barrell, J. The Upper Devonian Delta of the Appalachian Geosyncline. Am. J. Sci. (4), v. 36, 1913, pp. 429-472.
14. Barrell, J. The Upper Devonian Delta of the Appalachian Geosyncline. Am. J. Sci., v. 37, 1914, pp. 225-253.
15. Ashley, G. H. Oil Resources of Black Shales of Eastern United States. U.S. Geol. Survey Bull. G-41, 1917, pp. 311-324; Abstracts in Wash. Acad. Sci. J., v. 7, 1917, pp. 564-565.
16. Bownocker. Rise and Decline in Production of Petroleum in Ohio and Indiana (Abstracts). Mining and Metallurgy, No. 158, Sec. 22, 1920, 12 p.

## OHIO SHALE (Continued)

17. Moses, C. F. Geology of the Bellefontaine Outlier. Ohio St. Univ., Geol. Dept., M. A. Thesis (unpub), 1922.
18. Lamborn, R. E. The Olentangy Shale in Southern Ohio. J. of Geol., v. 35, 1927, pp. 708-722.
19. Bassler, R. S. Stratigraphy of Central Basin of Tennessee. Tenn. Div. Geol. Bull. 38, 1932, 268 p.
21. Arnold, C. A. The So-Called Branched Impressions of Callixylon Newberry; (Dawson) Eikins and Wieland and the Condition of their Preservation. J. of Geol., v. 42, 1934, pp. 71-76.
21. Baker, R. C. The Age and Fauna of the Olentangy Shale of Central Ohio. Iowa St. Univ., Dept. of Geol., M. A. Thesis (unpub), 1938.
22. Ballard, Norval. Stratigraphy and Structural History of East-Central United States. Am. Assoc. Petrol. Geol. Bull., v. 22, 1938, pp. 1519-1559.
23. Miller, P., Jr. A Test of the Ohio Shale for Yield of Oil. Ohio St. Univ., Dept. of Geol., B. A. Thesis (unpub), 1944, 23 p.
24. Ken, T. H. Some Studies of Ohio Coals, Shales, and Oils. Ohio St. Univ. Studies Eng. Series, v. 17, No. 3, Bull. 133, 1948, pp. 32-44.
25. Rich, J. L. Probable Deep Water Origin of Marcellus - Ohio - New Albany - Chattanooga Black Shale (Abstracts). Geol. Soc. Am. Bull., v. 59, 1948, pp. 1346-1347.
26. Ohio Development and Publicity Commission. Ohio an Empire within an Empire. F. J. Heer Printing Co., Columbus, Ohio, 1950, 214 p.
27. McFarlan, A. C. and W. H. White. Boyle - Duffin - Ohio Shale Relationships. Ky. Geol. Survey, Ser. 9, Bull. 10, 1952, 24 p.
28. Ostrom, M. E., M. E. Hopkins, W. A. White and L. D. McVickers. Uranium in Illinois Black Shales. Ill. St. Geol. Survey Circ. 203, 1955.
29. Hoover, K. V. Devonian - Mississippian Shale Sequence in Ohio. Ohio Geol. Survey, IC 27, 1960.
30. Tillman, J. R. On the Age of the Olentangy Shale of Central Ohio. Presented at North Central Section of G. S. A., 1969.
31. Schwiering, J. F. Devonian Shales of Ohio and their Eastern Equivalents. Ph. D. Dissertation at Ohio St. Univ., 1970.

## OHIO SHALE (Continued)

32. Oretton, E. Shale of Ohio. Geol. of Ohio, v. 7, pp. 21-26.
33. Prosser, C. The Ohio Shale in the Revised Ohio Geological Scale. Ohio Geol. Survey Bull., No. 7, p. 21.

## OIL AND GAS ANALYSES FROM DEVONIAN SHALES

1. Haught, O. L. Conditions for the Preservation of the Early Paleozoic Oil (West Virginia). Producers Mo., v. 19, No. 7, May 1955, pp. 17-18.
2. Haught, O. L. West Virginia's Oil and Gas - Lubricants and Fuels. W. Va. Geol. & Econ. Survey, Bull. 26, 1964, 39 p.
3. Morley. Natural Gas Analyses of Shale Gas. Geol. of Ohio, v. 6, p. 416.

## OIL SHALES

1. Reeves, J. R. Oil Shales of Indiana. Ind. Univ., Dept. of Geol., 1923, 92 p.
2. Ries, H. The Clay Deposits of Kentucky. Ky. Geol. Survey, Series 6, v. 12, 1926.
3. Geology of Oil Shales of the Eastern United States. Ky. Geol. Survey, Lexington, Ky., Pamph. 10, Ser. 6, 1927.
4. Jillson, W. R. Geology of the Oil Shales of the Eastern United States. Intl. Geol. Cong. 14th, Spain 1926, C. R., v. 4, 1928, pp. 2045-2052
5. Winchester, D. E. The Oil Possibilities of the Oil Shales of the United States. Fed. Oil Cons. Board, Washington, D. C., Appendix I, Rept. II, January 1928; reported in Guthrie, B. BuMines, Bul. 415, 1938, pp. 3-5.
6. Krumin, P. O. Review of the Estonian Oil Shale Industry, with a Brief Account of Oil Shale Development in the United States. Ohio State Univ. Studies, Eng. Series, v. 18, No. 6, 1949, 125 p.
7. Frost, I. C. and K. E. Stanfield. Estimating Oil Yield of Oil Shale from Its Specific Gravity, Anal. Chem., v. 22, March 1950, pp. 491-492.
8. Cox, B. B. Influence of Clay in Oil Production. World Oil, v. 131, No. 7, December 1950, pp. 174, 176, 180-182.
9. Krumin, P. O. "Further Studies of Ohio Coals and Oil Shales," Part I in Some Studies of Ohio Coals and Oil Shales. Ohio State Univ. Studies, Eng. Series, v. 30, No. 1, 1951; Eng. Expt. Station Bull. 143.
10. Schweinfurth, S. P. Regional Devolatilization of Devonian Oil Shales of Eastern Pennsylvania. M. S. Thesis, Univ. of Cincinnati, 1953.
11. Goodman, A. J. More Evidence of the Time of Devonian Oil Migration. Alberta Soc. Petrol. Geol. News Bull., v. 2, No. 8, 1954, pp. 1, 3; Canadian Oil & Gas Ind., v. 7, No. 9, 1954, pp. 48-50.
12. Klosky, S. "Oil Shale", in Mineral Facts and Problems. U. S. BuMines Bull. 556, 1955.
13. Lamar, J. E., W. J. Armon, and J. A. Simon. Illinois Oil Shales. Ill. St. Geol. Survey Circ. 208, 1956, 21 p.
14. Woodward, H. P. Multiple Folding in the Appalachian Basin. World Oil, v. 145, No. 7, December 1957, pp. 110-112, 115.

## OIL SHALES (Continued)

15. Swann, D. H. and A. H. Bell. "Habitat of Oil in the Illinois Basin," in Weeks, L.G., ed., in Habitat of Oil - A Symposium, June 1958, pp.447-472
16. Swanson, V. E. Oil Yield and Uranium Content of Black Shales. U. S. Geol. Survey, Prof. Paper 356-A, 1960, pp. 1-44.
17. Ertl, T. Shale Oil - A Competitive Fuel in the 1960's. J. Petrol. Tech., v. 13, No. 10, 1961, pp. 983-986.
18. Thorne, H. M., et al. Oil-Shale Technology: A Review. BuMines IC 8216, 1964, 24 p.
19. Newberry. Oil Shales in Erie County. Geology of Ohio, v. 2, pt. 1, pp. 195-196.

## OLENTANGY SHALE

1. Grabau, A. W. The Olentangy Shale of Central Ohio and Its Stratigraphic Significance (Abstracts). Geol. Soc. Am. Bull., v. 26, 1915, p. 112.
2. Lamborn, R. E. Notes on the Character and Occurrence of the Olentangy Shale in Southern Ohio. Ohio J. Sci., v. 29, 1929, pp. 27-38.
3. Newcombe, R. J. B. Middle Devonian Unconformity in Michigan. Geol. Soc. Am. Bull., v. 41, 1930, pp. 725-738.

**ONONDAGA FORMATION**

1. Willard, B. The Onondaga Formation in Pennsylvania. J. of Geol., v. 44, 1936, pp. 578-603.

## ONONDAGA LIMESTONE\*

1. Willard, B. J. Geol., v. 44, No. 5, 1936, pp. 578-603.
2. Willard, B. Pa. Geol. Survey, 4th Ser., Bull. G-19, 1939, pp. 141-160.
3. Cooper, B. N. Va. Geol. Survey Bull. 55, 1939, pp. 41-42.
4. Butts, C. Va. Geol. Survey Bull 52, Part 1, 1940, p. 294-303.
5. Cooper, G. A., et al. Geol. Soc. Am. Bull., v. 53, No. 12, Part 1, 1942, pp. 1733, 1744-1745.
6. Goldring, W. N. Y. St. Mus. Bull. 332, 1943, pp. 226-235.
7. Woodward, H. P. Devonian System of West Virginia. W. Va. Geol. & Econ. Survey, v. 15, 1943.
8. Stevenson, R. E. N. Y. St. Sci. Serv. RI 3, 1949, pp. 3, 6-7.
  
9. Oliver, W. A., Jr. Geol. Soc. Am. Bull., v. 65, No. 7, 1954, pp. 621-652.
10. Oliver, W. A., Jr. Geol. Soc. Am. Bull., v. 67, No. 11, 1956, pp. 1441-1474.
11. Swain, F. M. Am. Assoc. Petrol. Geol. Bull., v. 42, No. 12, 1958, pp. 2858-2891.
12. Arndt, H. H., et al. Geol. Soc. Am. Guidebook Pittsburg Mtg, 1959, pp. 4, 26.

\*Titles for articles were not given in the indexing source.

## ORGANIC MATERIALS OF THE DEVONIAN SHALE

1. Ries, Heinrich. The Clay Deposits of Kentucky. Ky. Geol. Survey, v. 8, Ser. 6, 1922.
2. Haught, O. L. Conditions for the Presentation of Early Paleozoic Oil (West Virginia). Producers Monthly, v. 19, No. 7, 1955, pp. 17-18.
3. Swain, F. M. Organic Materials of Early Middle Devonian, Mount Union Area, Pennsylvania. Am. Assoc. Petrol. Geol. Bull., v. 42, 1958, pp. 2858-2891.
4. Dobbins, D. A. & F. M. Swain, Jr. Stratigraphy and Organic Substances of Middle and Upper Devonian, Orbisonia Quadrangle, Pennsylvania (Abstract). Geol. Survey. Assoc. Bull., v. 70, 1959, pp. 1590.
5. Hixon, S. B. Petrography of the Middle Devonian Bois Blanc Formation of Michigan & Ontario (Abstracts). Dissertation Abs., v. 25, No. 6, 1964, pp. 3513-3514.
6. Smith, J. W. and N. B. Young. Organic Composition of Kentucky's New Albany Shale - Determination and Uses. Chem. Geol., v. 2, No. 2, 1967, pp. 157-170.

**PERRYSBURG FORMATION\***

1. Pepper, J. F. and W. de Witt, Jr. U. S. Geol. Survey, Oil & Gas Inv. Chart OC-45, 1951.
2. deWitt, W., Jr. and G. W. Colton. U. S. Geol. Survey Geol. Quad. Map GQ-30, 1953.
3. Rickard, L. V. N. Y. Geol. Assoc. 29th An. Meeting Guidebook, 1957, p. 15.
4. deWitt, W., Jr. Am. Assoc. Petrol. Geol. Bull., v. 44, No. 12, 1960, p. 1935.

\*Titles for articles were not given in the indexing source.

## PETERSVILLE SHALE\*

1. Morse, W. C. and A. F. Foerste. Ky. Geol. Survey Bull. 16, 1912,  
p. 24.

\*Titles for articles were not given in indexing source.

## PIPE CREEK SHALE MEMBER\*

1. Chadwick, G. H. Geol. Soc. Am. Bull., v. 34, 1923, p. 69.
2. Chadwick, G. H. Pan-Am. Geol., v. 60, 1933, pp. 95, 96, 98, 193, 198, 199, 276, 278, 351, 357.
3. Chadwick, G. H. Geol. Soc. Am. Bull., v. 46, No. 2, 1935, p.352.
4. Woodward, H. P. Devonian System of West Virginia. W. Va. Geol. & Econ. Survey, v. 15, 1943, pp. 247, 373, 389, 390, 408-411, 537.
5. Bradley, W. H. and J. F. Pepper. U. S. Geol. Survey Bull. 899-A, 1938, p. 15.
6. Pepper, J. F. and W. deWitt, Jr. U. S. Geol. Survey Oil & Gas Inv. Prelim. Chart 37, 1950.
7. deWitt, W., Jr. Am. Assoc. Petrol. Geol. Bull., v. 44, No. 12, 1960, pp. 1933-1935.

\*Titles for articles were not given in indexing source.

## PORTAGE GROUP

1. Willard, B. Portage Group in Pennsylvania. Geol. Soc. Am. Bull., v. 46, pp. 1195-1218, 1935.

PRESSURE-DEPTH RELATIONS AND BOTTOM-HOLE PRESSURES  
OF WELLS IN THE DEVONIAN SHALES

1. Russell, W. L. Pressure-Depth Relations in Appalachian Region. Am. Assoc. Petrol. Geol. 5603, 1972, p. 528.

## PRODUCTION FROM WELLS IN SHALES (DEVONIAN)

1. Haught, O. L. Oil and Gas Report on Kanawha County, West Virginia.  
W. Va. Geol. & Econ. Survey, Bull. No. 19, 1960.
2. Barnes, J. M. Kentucky's Hopkins County Has Drilling Spree.  
Oil & Gas J., v. 61, No. 44, 1963, pp. 180, 181, 184.
3. Calvert, W. L. Summary of Oil and Gas Activity in Ohio During  
1962. Ohio Div. Geol. Survey RI 47, 1963, 125 pp.
4. Rose, W. D. Oil, Gas, and Structure Map, Slaughter's Quadrangle,  
Kentucky. Ky. Geol. Survey, Ser. 10, 1963.
5. Rose, W. D. and A. E. Smith. Oil, Gas, and Structure Map, Hanson  
Quadrangle, Kentucky. Ky. Geol. Survey, 1963.
6. Smith, J. W. and N. B. Young. Specific-Gravity to Oil-Yield  
Relationships for Black Shales of Kentucky's New Albany  
Formation. BuMines RI 6531, 1964

## PRODUCTION HISTORY OF DEVONIAN SHALE

1. Grabau, A. W. The Olentangy Shale of Central Ohio and Its Stratigraphic Significance (Abstracts). Geol. Soc. Am. Bull., v. 26, 1915, p. 112.
2. Grabau, A. W. Stratigraphic Relationships of the Tulip Limestone and the Genesee Shale in Eastern North America. Geol. Soc. Am. Bull., v. 28, 1917, pp. 945-958; Abstracts, pp. 207-208.
3. Bownocker. Rise and Decline in Production of Petroleum in Ohio and Indiana (Abstracts). Mining & Metallurgy, No. 158, sec. 22, 1920, 12 p.
4. Fenneman, N. M. Abstract of Results, Resources. Survey of the Commercial Club of Cincinnati. Univ. of Cincinnati, Inst. of Sci. Resc., Ser. 2, No. 1, 1927, 86 p.
5. Jillson, W. R. The Oil and Gas in the Bluegrass Region in Kentucky. Geol. Survey of Ky., Ser. 6, v. 40, 1931.
6. Fisher, R. A. B. Isopachous Maps of the Appalachian Geosyncline. Ill. Univ., B. A. Thesis (unpub.), 1941, 15 p.
7. Gutshick, R. C. Origin of Some Bitumen in the Devonian - Mississippian Black Shales and the Eocene Green River Shale. Geol. Soc. Am. Bull., v. 58, 1947, p. 1185.
8. Haas, W. H. The Chattanooga Shale Type Area (Tennessee) (Abstract). Geol. Soc. Am. Bull., v. 58, 1947, p. 1189.
9. Cadman, W. H. The Oil Shale Deposits of the World and Recent Development in their Exploitation and Utilization, Reviewed to May 1947. J. Inst. Petrol., v. 34, 1948, pp. 109-132.
10. Kreidler, W. L. History, Geology & Future Possibilities of Gas and Oil in New York State. New York State Museum, Circ. 33, 1953
11. Woodward, H. P. Problems of Deep Appalachian Basin. Petrol. Eng., v. 27, No. 3, March 1955, pp. B50-B56, B-58.
12. Haught, O. L. Oil and Gas Report and Map of Pleasants, Wood, Ritchie Counties, West Virginia. W. Va. Geol. Survey Bull., No. 11, 1955, 21 p.
13. Haught, O. L. Oil and Gas Report and Map of Marshall, Wetzel and Tyler Counties, West Virginia. W. Va. Geol. Survey Bull., No. 12, 1955, 49 p.
14. Haught, O. L. Oil and Gas Report in Map of Monongalia, Marion and Taylor Counties, West Virginia. W. Va. Geol. Survey Bull., No. 13, May 1956, 51 pp.

## PRODUCTION HISTORY OF DEVONIAN SHALE (Continued)

15. Lytle, W. S. History, Present Status and Future Possibilities of Secondary Recovery Operations in Pennsylvania. Bull. Interstate Oil Compact Comm. Committee, v. 1, No. 2, December 1959, pp. 28-42.
16. Haught, O. L. Oil and Gas in Southern West Virginia. W. Va. Geol. Survey Bull., No. 17, 1959, 34 p.
17. Price, L. W. Et al. Summary of Operations, Oil and Gas Fields in Michigan, 1959. Mich. Geol. Survey, 1959.
18. Overbey, W. K., Jr. Oil and Gas Report on Jackson, Mason, and Putnam Counties, West Virginia. W. Va. Geol. Econ. Survey Bull., No. 23, 1961, 26 p.
19. Weaver, O. D. Revival of the Appalachians. Oil & Gas J., v. 60, No. 8, 1962, pp. 88-97.
20. Stewart, J. A. History of Shinnston, West Virginia Oil Field. W. Va. Acad. Sci. Proc., v. 36, 1964, pp. 132-135.
21. Cohee, G.V. Geologic History of the Michigan Basin. Wash. Acad. Sci. J., v. 55, No. 9, 1965, pp. 211-223.

**RENWICK SHALE MEMBER\***

1. Caster, K. E. Geol. Soc. Am. Bull., v. 44, Part 1, 1933, p. 202.
2. Cooper, G. A., et al. Geol. Soc. Am. Bull., v. 53, No. 12, Part 1, 1942, p. 1768.
3. deWitt, W., Jr. and G. W. Colton. Am. Assoc. Petrol. Geol. Bull., v. 43, No. 12, 1959, pp. 2814, 2815, 2817, 2821, 2827.

\*Titles for articles were not given in the indexing source.

## RESOURCES IN BROWN SHALES

1. Orton, E. First Annual Report of Geological Survey of Ohio (Third Organization). The Westbote Co. (State Printers), Columbus, Ohio, 1890.
2. Jillson, W. R. The Oil and Gas Resources of Kentucky. Ky. Geol. Survey, 1919.
3. Stout, W. and R. E. Lamborn. Geology of Columbiana County, Ohio. Ohio Geol. Survey, Bull. 28, 408 p.
4. Jillson, W. R. The Oil and Gas in the Bluegrass Region in Kentucky. Ky. Geol. Survey, Ser. 6, v. 40, 1931.
5. Heald, K. C. and E. Ayres. "Our Reserves of Coal and Shale," in Our Oil Resources, L. Fanning, ed. 1945, pp. 157-209.
6. Ball, M. W., ed. Possible Future Petroleum Provinces of North America. Am. Assoc. Petrol. Geol. Bull., v. 35, No. 2, February 1951, pp. 438-457.
7. Settle, H. W. Geology of the Hermon Pool, Todd County, Kentucky. Ky. Geol. Survey, Ser. 9, Bull. 8, 1951, 32 pp.
8. Ball, J. R. Geology and Mineral Resources of the Carlinville Quadrangle. Ill. St. Geol. Survey Bull. 77, 1952, 110 p.
9. Ingham, A. I. et al. Oil and Gas Geology of the Sheffield Quadrangle, Pennsylvania. Topographic & Geologic Survey, Bull. M38, 1956.
10. Davison, K. and R. L. Shick. How to Get a Million Dollars from an Abandoned Oil Lease (Illinois). Oil & Gas J., v. 58, No. 6, February 1960, pp. 94-98, 100.
11. Haught, O. L. Oil and Gas Report on Kanawha County, West Virginia. W. Va. Geol. & Econ. Survey Bull. 19, 1960.
12. Nosow, E. New Reservoir Possibilities in Kentucky. Ky. Geol. Survey Spec. 4, Ser. 10, 1961, pp. 72-77.
13. Overbey, W. K. Jr. Oil and Gas Report on Jackson, Mason, and Putnam Counties, West Virginia. W. Va. Geol. Survey & Econ. Survey Bull. 23, 1961, 26 p.
14. Dyson, J. L. Geology and Mineral Resources of the Northern Half of the New Bloomfield Quadrangle, Pennsylvania. Pa. Geol. Survey, Ser. 4, Atlas A-137ab, Bull. A137ab, 1963, 63 p.

## RESOURCES IN BROWN SHALES (Continued)

15. Lytle, W. S., and L. A. Keeren. Preliminary Report of the Oil and Gas Resources of the Warren  $7\frac{1}{2}$  Quadrangle, Pennsylvania. Pa. Geol. Survey, Ser. 4, PR 163, 1963.
16. Calvert, W. L. Ohio's Petroleum Development and Geological Occurrence (Abstracts). Tulsa Geol. Soc. Dig., v. 32, 1964, pp. 174-175.
17. McGlade, W. G. Oil and Gas Geology of the Youngsville Quadrangle, Pennsylvania. Pa. Geol. Survey, Ser. 4, Bull M53 (Mineral Resources Rept.), 1964, 56 p.
18. Price, R. C. and G. R. Dever, Jr. Oil and Gas Map, Sulpher Well Quadrangle, Kentucky. Ky. Geol. Survey, Ser. 10, 1964.
19. Rose, W. D. Oil, Gas, and Structure Map, Madisonville West Quadrangle, Kentucky. Ky. Geol. Survey, Ser. 10, 1964.
20. Calvert, R. H. Geology of the Whitesville Quadrangle, Kentucky. U. S. Geol. Survey Quad. Map GQ-419, 1965.
21. Cattermole, J. M. Geology of the East Fork Quadrangle, Kentucky. U. S. Geol. Survey Quad. Map GQ-413, 1965.
22. Clark, L. D. and M. D. Crittenden, Jr. Geology of the Mattingly Quadrangle, Kentucky-Indiana. U. S. Geol. Survey Quad Map GQ-361, 1965.
23. Dever, G. R. Oil, Gas, and Structure Map of Rowan County, Kentucky. Ky. Geol. Survey, Ser. 10, 1965.
24. Franklin, G. J. Geology of Hanson Quadrangle, Kentucky. U. S. Geol. Survey, Quad Map GQ-365, 1965.
25. Haught, O. L. Geology of Oil and Gas. W. Va. Geol. & Econ. Survey, Circ. 3, 1965.
26. Haynes, D. D. Geology of the Hiseville Quadrangle, Ky. U. S. Geol. Survey Quad Map GQ-401, 1965.
27. Rose, W. D. Kentucky Drillers Probe Deep. Oil & Gas J., v. 63, No. 34, 1965, pp. 140-145.
28. Jillson, W. R. The Geology of Casey County, Ky. Roberts Printing Co., Frankfort, Ky., 1965, 108 p.
29. Klemic, H. Geology of the Honey Grove Quadrangle, Ky. U. S. Geol. Survey Quad Map GQ-376, 1965.
30. Lewis, R. Q. and R. E. Thaden. Geologic Map of the Cumberland City Quadrangle, Kentucky. U. S. Geol. Survey Quad Map GQ-475, 1965.

## RESOURCES IN BROWN SHALES (Continued)

31. Maxwell, C. H. Geology of the Dunville Quadrangle, Kentucky. U. S. Geol. Survey Quad Map GQ-367, 1965.
32. Maxwell, C. H. Geology of the Phil Quadrangle, Kentucky. U. S. Geol. Survey Quad Map GQ-395, 1965.
33. Moore, F. B. Geologic Map of Sonora Quadrangle, Hardin and Larue Counties, Kentucky. U. S. Geol. Survey Quad Map GQ-492, 1965.
34. Moore, S. L. Geologic Map of the Hickory Flat Quadrangle, Kentucky-Tennessee. U. S. Geol. Quad Map GQ-420, 1965.
35. Morris, R. H. Geologic Map of the Stricklett Quadrangle North-eastern Kentucky. U. S. Geol. Survey Quad Map GQ-396, 1965.
36. Rainey, H. C. Geology of the Auburn Quadrangle, Kentucky. U. S. Geol. Survey Quad. Map GQ-415, 1965.
37. Rainey, H. C. Geologic Map of the Dennis Quadrangle, Logan County, Kentucky. U. S. Geologic Survey Quad Map GQ-450, 1965.
38. Branson, E. R. Economic Geology of Allen County, Kentucky. Ky. Geol. Survey, Ser. 10, County Rept. 1, 1966, 22 pp.
39. Englund, K. J., J. W. Huddle, and A. O. Delaney. Geologic Map of the West Liberty Quadrangle, Morgan County, Kentucky. U. S. Geol. Survey Quad. Map GQ-589, 1967.
40. Howard, R. H. Oil and Gas Pay Maps of Illinois. Ill. Geol. Survey, Ill. Petrol. 84, 1967, 64 p.
41. Jenkins, E. C. Geologic Map of the Millard Quadrangle, Pike County, Kentucky. U. S. Geol. Survey Quad Map GQ-659, 1967.
42. McGlade, W. G. Oil and Gas Geology of the Amity and Claysville Quadrangles, Pennsylvania. Pa. Geol. Survey, 4th Series, Bull. M54 (Mineral Resources Rept.), 1967, 131 p.
43. Palmer, J. E. Geologic Map of the St. Charles Quadrangle, Hopkins and Christian Counties, Kentucky. U. S. Geol. Survey Quad Map GQ-674, 1967.
44. Rice, C. L. Geologic Map of the Prestonsburg Quadrangle, Floyd and Johnson Counties, Kentucky. U. S. Geol. Survey Ouad Map GQ-641, 1967.
45. Simmons, G. C. Geologic Map of the Palmer Quadrangle, East-Central Kentucky. U. S. Geol. Survey Quad Map GQ-613, 1967.

## RESOURCES IN BROWN SHALES (Continued)

46. Smith, J. H. Geologic Map of Rockholds Quadrangle, Whitley and Knox Counties, Kentucky. U. S. Geologic Survey Quad Map GQ-677, 1967.
47. Smith, J. H. Geologic Map of the Wofford Quadrangle, Whitley County, Kentucky. U. S. Geol. Survey Quad Map GQ-677, 1967.
48. Tabor, R. W. Geologic Map of the Williamsburg Quadrangle, Whitley County, Kentucky. U. S. Geologic Survey Quad Map GQ-616, 1967.
49. Dennison, J. M. Petroleum Related to Middle and Upper Devonian Deltaic Facies in Central Appalachians. Am. Assoc. Petrol. Geol. 5508, p. 1179, 1971.
50. Bownocker. Occurrence and Exploitation of Petroleum and Natural Gas. Ohio Geol. Survey, Bull. 1, pp. 17-325.

## RHINESTREET SHALE MEMBER\*

1. Clark, J. M. N. Y. St. Mus. Handbook 19, 1903, p. 23.
2. Luther, D. D. N. Y. St. Mus. Bull. 69, 1903, pp. 1000-1029.
3. Hartnagel, C. A. N. Y. St. Mus. Handbook 19, 1912, pp. 75-76.
4. Chadwick, G. H. Geol. Soc. Am. Bull., v. 30, 1919, p. 157;  
Geol. Soc. Am. Bull., v. 34, 1923, p. 69.
5. Woodward, H. P. Devonian System of West Virginia. W. Va. Geol. & Econ. Survey, v. 15, 1943, p. 250.
6. Colton, G. W. and W. deWitt, Jr. U. S. Geol. Survey Oil & Gas Inv. Chart OC-54, 1958.
7. Sutton, R. G. N. Y. St. Mus. Bull. 380, 1960, pp. 18-19.

\*Titles for articles were not given in indexing source.

**SENECA LIMESTONE\***

1. Vanuxem, L. N. Y. Geol. Survey, 3rd Rept., 1839, pp. 275-278.
2. Cooper, G. A., et al. Geol. Soc. Am. Bull., v. 53, No. 12, Part 1, 1942, pp. 1774-1775.
3. Oliver, W. A., Jr. Geol. Soc. Am. Bull., v. 65, No. 7, pp. 629-635, 637-641.
4. Oliver, W. A., Jr. U. S. Geol. Survey Prof. Paper 400-B, pp. 173-174.

\*Titles for articles were not given in indexing source.

STRATIGRAPHIC CORRELATIONS, LOGGING CROSS-SECTIONS,  
STRATIGRAPHY

1. Oretton, E. First Annual Report of Geological Survey of Ohio (Third Organization). Westbote Co., Columbus, Ohio, 1890.
2. Bassler, R. S. The Stratigraphy of a Deep Well at Waverly, Ohio. Am. Sci. J. (4), v. 31, 1911, pp. 19-24.
3. Bassler, R. S. The Waverlyan Period of Tennessee. U.S. Nat. Mus. Proc., v. 41, 1911, pp. 209-224.
4. Kindle, E. M. The Stratigraphic Relations of the Devonian Shales of Northern Ohio. Am. J. Sci. (4), v. 34, 1912, pp. 187-213.
5. Kindle, E. M. The Stratigraphic Relations of the Devonian Shales of Ohio and Pennsylvania. Am. J. Sci., 4th Ser., v. 44, 1912, pp. 187-213.
6. Grabau, A. W. Stratigraphic Relationships of the Tully Limestone and the Genesee Shale in Eastern North America. Geol. Soc. Am. Bull., v. 28, 1917, pp. 945-958; Abstracts, pp. 207-208.
7. VerWiebe, W. A. Correlation of the Devonian Shales of Ohio and Pennsylvania. Am. J. Sci., 4th Ser., v. 44, 1917, pp. 33-47.
8. Newcombe, R. J. Middle Devonian Unconformity in Michigan. Geol. Soc. Am. Bull., v. 41, 1930, pp. 725-738.
9. Bassler, R. S. Stratigraphy of Central Basin of Tennessee. Tenn. Div. Geol. Bull., v. 38, 1932, 268 p.
10. Fettke, C. R. Subsurface Devonian and Silurian Sections Across Northern Pennsylvania and Southern New York. Geol. Soc. Am. Bull., v. 44, 1933, pp. 601-660.
11. Caster, K. E. Boundary Between the Devonian and Mississippian Systems in Western Pennsylvania. Geol. Soc. Am. Proc 1934, 1935, pp. 441-442.
12. Appalachian Geol. Society. Oriskany Sand and Development Shale, Appalachian Area, in Oriskany Sand Symposium. Appalachian Geol. Soc., Charleston, W. Va., 1937.
13. Ballard, Norval. Stratigraphy and Structural History of East-Central United States. Am. Assoc. Petrol. Geol. Bull., v. 22, 1938, pp. 1519-1559.
14. Freeman, L. B. A Sample Study of the Devonian of Western Kentucky. Ky. Dept. of Mines & Minerals, Geol. Div. Bull., Ser. 8, 1939.

STRATIGRAPHIC CORRELATIONS, LOGGING CROSS-SECTIONS,  
STRATIGRAPHY (Continued)

15. Fisher, R. A. B. Isopachous Maps of the Appalachian Geosyncline. Ill. Univ., B. A. Thesis (unpub.), 1941, 15 p.
16. Cooper, G. A., et al. Correlation of the Devonian Sedimentary Formation of North America. Geol. Soc. Am. Bull., v. 53, 1942, pp. 1729-1794.
17. Cooper, G. A. and A. S. Warthin, Jr. New Devonian Correlations. Geol. Soc. Am. Bull., v. 53, 1942, pp. 873-888.
18. McFarlan, A. C. Geology of Kentucky. Ky. Univ., Lexington, Ky., 1943, 531 pp.
19. Illinois State Geological Survey. Symposium on Devonian Stratigraphy. Ill. Geol. Survey Bull., v. 68, 1944, pp. 89-222.
20. Bayles, R. E. Subsurface Upper Devonian Sections in Southwestern Pennsylvania. Am. Assoc. Petrol. Geol. Bull., v. 33, 1949, pp. 1682-1703.
21. Freeman, L. B. Regional Aspects of Silurian and Devonian Subsurface Stratigraphy in Kentucky (Part 1). Am. Assoc. Petrol. Geol. Bull. v. 35, No. 1, January 1951, pp. 1-61; Parts 1 & 2, Ky. Geol. Survey, Ser. 9, Bull. 6, 565 pp.
22. Ehlers, G. M., E. C. Stumm, and R. N. Kesling. Devonian Rocks of Southeastern Michigan and Northwestern Ohio. Edwards Bros., Inc., Ann Arbor, Mich., 1951.
23. Ball, J. R. Geology and Mineral Resources of Carlinville Quadrangle. Ill. St. Geol. Survey Bull., No. 77, 1952, 110 p.
24. Luttrell, E. M. and E. A. Livesay. Devonian and Lower Mississippian Chert Formations of Western Kentucky. Ky. Geol. Survey, Bull. 11, Ser. 9, 1952, 16 pp.
25. McFarlan, A. C. and W. H. White. Boyle-Duffin-Ohio Shale Relationships. Ky. Geol. Survey, Ser. 9, No. 10, 1952, 24 p.
26. McGregor, D. J. Stratigraphic Analysis of Upper Devonian and Mississippian Rocks in Michigan Basin. Am. Assoc. Petrol. Geol. Bull., v. 38, 1954, pp. 2324-2356.
27. Daly, J. W. The Devonian Problem (Abstracts). Oil & Gas J., v. 53, No. 27, November 8, 1954, p. 148; Geophysics, v. 20, No. 1, January 1955, p. 188.

STRATIGRAPHIC CORRELATIONS, LOGGING CROSS-SECTIONS,  
STRATIGRAPHY (Contineed)

28. Murray, H. H. Sedimentation and Stratigraphy of the Devonian Rocks of Southeastern Indiana. Ind. Geol. Survey Field Conf. Guidebook, No. 8, 1955, 73 pp.
29. Campbell, Guy. New Albany Shale and Kinderhook Series in Indiana (Abstracts). Geol. Soc. Am. Bull., v. 67, No. 12, pt. 2, December 1956, p. 1679.
30. Conrad, S. G., R. T. Elmore, Jr. and S. W. Maher. Stratigraphy of the Chattanooga Black Shale in the Flynn Creek Structure, Jackson County, Tennessee. Tenn. Acad. Sci. J., v. 32, No. 1, January 1957, pp. 9-18.
31. Jones, T. H. and A. S. Cate. Preliminary Report on a Regional Stratigraphic Study of Devonian Rocks of Pennsylvania. Pa. Topographic and Geol. Survey, 4th Ser., Spec. Bull. 8, 1957, 5 p.
32. Geological Society of Kentucky, et al. Field Trip 1958, Itinerary-Sedimentation and Stratigraphy of Silurian and Devonian Rocks in Louisville Area, Kentucky (Guide Book). May 1958, 46 p.
33. Whiting, L. L. and M. O. Oros. Electric-Log Cross-Section of Silurian Devonian Formations of a Part of Central Illinois. Ill. St. Acad. Sci. Trans. 1957, v. 50, Aug. 10, 1958, pp. 172-179.
34. Briggs, L. I., Jr. Physical Stratigraphy of Lower Middle Devonian Rocks in the Michigan Basin. Mich. Basin Geol. Soc. Guidebook, An. Geol. Excursion, June 1959, pp. 39-58.
35. Nosow, E. Some Devonian-Silurian Stratigraphic Relationships on the West Flank of the Cincinnati Arch. Ky. Geol. Survey, Ser. 10, Spec. Pub. 2, 1959, pp. 67-81.
36. Rudman, A. J. A Seismic Reflection Survey of the Surface of the Basement Complex in Indiana. Ind. Geol. Survey Rept. Prog. 18, April 1960, 26 p.
37. Jillson, W. R. Geology of the Goose Creek Dome in Casey and Russell Counties, Kentucky. Perry Pub. Co., Frankfort, Ky. 1960, 88 p.
38. Calvert, W. L. Subsurface Information Catalog. Ohio Geol. Survey IC-31, 1962.
39. Burtner, R. L. Sediment Dispersal Patterns within the Catskill Facies of Southeastern New York and Northeastern Pennsylvania, in Symposium on Middle and Upper Devonian Stratigraphy of Pennsylvania and Adjacent States. Pa. Geol. Survey, 4th Ser., Gen. Geol. Rept. G-39, 1963, pp. 7-23.

STRATIGRAPHIC CORRELATIONS, LOGGING CROSS-SECTIONS,  
STRATIGRAPHY (Continued)

40. Cate, A. S. "Lithostratigraphy of Smoe Middel and Upper Devonian Rocks in the Subsurface of Southwestern Pennsylvania," in Symposium on Middle and Upper Devonian Stratigraphy of Pennsylvania and Adjacent States. Pa. Geol. Survey, 4th Ser., Gen. Geol. Rept. G-39, 1963, pp. 229-240.
41. Colton, G. W. "Devonian and Mississippian Correlations in Part of North-Central Pennsylvania - A Report of Progress," in Symposium on Middle and Upper Devonian Stratigraphy of Pennsylvania and Adjacent States. Pa. Geol. Survey, 4th Ser., Bull. Gen. Geol. Rept. G-39, 1963, pp. 115-225.
42. Dennison, J. M. Stratigraphy Between Tioga Metabentonite and Pocono Formation along Allegheny Front in Maryland and West Virginia, in Symposium on Middle and Upper Devonian Stratigraphy of Pennsylvania and Adjacent States. Pa. Geol. Survey, 4th Ser., Bull. (Gen. Geol. Rept.) G-39, 1963, pp. 213-227.
43. Dennison, J. M. and O. D. Naegele. Structure of Devonian Strata Along Allegheny Front from Corriganville, Md., to Spruce Knob, West Virginia. W. Va. Geol. & Econ. Survey Bull. 24, 1963, 42 p.
44. Dyson, J. L. Geology and Mineral Resources of the Northern Half of the New Bloomfield Quadrangle. Pa. Geol. Survey, 4th Ser., Atlas A-137ab, (Bull. A137ab), 1963, 63 p.
45. Frakes, L. A. Stratigraphy of the Nonred Devonian Across Pennsylvania in Symposium on Middle and Upper Devonian Stratigraphy of Pennsylvania and Adjacent States. Pa. Geol. Survey, 4th Ser., Bull. (Gen. Geol. Rept.) G-39, 1963, pp. 183-199.
46. Glaeser, J. D. "Catskill Reference Section and Its Correlation to Other Measured Surface Sections in Northeast Pennsylvania," in Symposium on Middle and Upper Devonian Stratigraphy of Pennsylvania and Adjacent States. Pa. Geol. Survey, 4th Ser., Bull. (Gen. Geol. Rept.) G-39, 1963, pp. 51-62.
47. Hoskins, D. M. et al. "Lithology, Subdivision & Correlation of the Catskill Formation in East Central Pennsylvania" in Symposium on Middle and Upper Devonian Stratigraphy of Pennsylvania and Adjacent States. Pa. Geol. Survey, 4th Ser., Bull. (Gen. Geol. Rept) G-39, 1963, pp. 147-163.
48. Hoskins, D. M. A Provisional Silurian to Mississippian Rock - Stratigraphic Column for Central Pennsylvania. Pa. Acad. Sci. Proc., v. 37, 1963, pp. 199-205.

STRATIGRAPHIC CORRELATIONS, LOGGING CROSS-SECTIONS,  
STRATIGRAPHY (Continued)

49. Hoskins, D. M. "Sub-Carboniferous Rocks," in Geology of Southern Part of the Pennsylvania Anthracite Region -- Field Trip No. 4, 1963. Guidebook, N. Y. Geol. Soc. Am., 1963, pp. 12-13.
50. Kirkby, E. A. Index to Michigan Geologic Maps, 1842-1962. Mich. Geol. Survey, 1963.
51. Klemic, H., J. C. Warman and A. R. Taylor. Geology and Uranium Occurrences of the Northern Half of the Lehighton, Pennsylvania Quadrangle and Adjoining Areas. U. S. Geol. Survey Bull. 1138, 1963, 97 pp.
52. Leeper, W. S. "Interpretation of Primary Bedding Structures in Mississippian and Upper Devonian Rocks of Southeastern Somerset County Pennsylvania," in Symposium on Middle and Upper Devonian Stratigraphy of Pennsylvania and Adjacent States. Pennsylvania Geol. Survey, 4th Ser., Bull. (Gen. Geol. Rept.) G-39, 1963, pp. 165-181.
53. Meyer, H. "Petrography of the Catskill Facies in Three Localities from Central Pennsylvania," in Symposium on Middle and Upper Devonian Stratigraphy of Pennsylvania and Adjacent States. Pa. Geol. Survey, 4th Ser., Bull. (Gen. Geol. Rept.) G-39, 1963, pp. 127-146.
54. Rose, W. D. Oil, Gas, and Structure Map, Slaughters Quadrangle, Kentucky. Ky. Geol. Survey, Ser. 10, 1963.
55. Rose, W. D. and A. E. Smith. Oil, Gas, and Structure Map, Hanson Quadrangle, Kentucky. Ky. Geol. Survey, 1963.
56. Shepps, V. C., ed. Symposium on Middle and Upper Devonian Stratigraphy of Pennsylvania and Adjacent States. Pa. Geol. Survey, 4th Ser., Bull. (Gen. Geol. Rept.) G-39, 1963; Topographical & Geol. Survey, Gen. Geol. Rept. G-39, 1963, 301 p.
57. Southern Illinois University. Illinois State Academy of Science, Geology and Botany Field Trip - Pike Hills Area, Jackson and Union Counties, Alto Pass, Carbondale, Jonesboro, Murphysboro, and Altenburg Quadrangles. 1963.
58. Wagner, W. R. "Correlation of Susquehanna Group in Part of Northeastern Pennsylvania," in Symposium on Middle and Upper Devonian Stratigraphy of Pennsylvania and Adjacent States. Pa. Geol. Survey, 4th Ser., Bull. (Gen. Geol. Rept.) G-39, 1963, pp. 63-77.
59. Wheeler, H. E. "Catskill and the Acadian Discontinuity," in Symposium on Middle and Upper Devonian Stratigraphy of

STRATIGRAPHIC CORRELATIONS, LOGGING CROSS-SECTIONS,  
STRATIGRAPHY (Continued)

59. Pennsylvania and Adjacent States. Pa. Geol. Survey, 4th Ser., Bull. (Gen. Geol. Rept.) G-39, 1963, pp. 103-113.
60. Wietzchoski, J. F. "Subsurface Correlation of Upper Devonian Lithostratigraphy in Northeastern Pennsylvania and Southwestern New York," in Symposium on Middle and Upper Devonian Stratigraphy of Pennsylvania and Adjacent States. Pa. Geol. Survey, 4th Ser., Bull. (Gen. Geol. Rept.) G-39, 1963, pp. 43-50.
61. Woodward, H. P. "Upper Devonian Stratigraphy and Structure in Northeastern Pennsylvania," in Symposium on Middle and Upper Devonian Stratigraphy of Pennsylvania and Adjacent States. Pa. Geol. Survey, 4th Ser., Bull. (Gen. Geol. Rept.) G-39, 1963, pp. 279-301.
62. Woodrow, D. L. "Post Rhine Street Stratigraphy in the Sayre and Towanda Quadrangles, Pennsylvania - A Progress Report," in Symposium on Middle and Upper Devonian of Pennsylvania and Adjacent States. Pa. Geol. Survey, 4th Ser., Bull. (Gen. Geol. Rept.) G-39, 1963, pp. 79-85.
63. Adkinson, W. L. and J. E. Johnston. Geology of the Salyersville North Quadrangle, Kentucky. U. S. Geol. Survey, Geol. Quad Map GQ-276, 1964.
64. Calvert, W. L. Ohio's Petroleum Development and Geological Occurrence (Abstract). Tulsa Geol. Soc. Digest, v. 32, 1964, pp. 174-175.
65. Haught, O. L. and W. K. Overbey, Jr. Map of Braxton and Clay Counties Showing Oil and Gas Fields, Structural Contours on Top of Greenbrier Limestone. W. Va. Geol. & Econ. Survey, 1964.
66. Jillson, W. R. Geology of the Area About Virden, Powell County, Kentucky. Roberts Printing Co., Frankfort, Ky., 1964.
67. LeMone, D. V. The Upper Devonian and Lower Mississippian Sediments of the Michigan Basin and Bay County, Michigan (Abstracts). Dissertation Abstracts, v. 25, No. 4, 1964, p. 2447.
68. Lineback, J. A. Stratigraphy of the New Albany Shale in Southeastern Indiana (Abstracts). Geol. Soc. Am., Spec Paper 76, 1964, pp. 102-103.
69. McGlade, W. G. Oil and Gas Geology of the Youngsville Quadrangle, Pennsylvania. Pa. Geol. Survey, 4th Ser., Bull. M53 (Mineral Resources Rept.), 1964, 56 pp.

STRATIGRAPHIC CORRELATIONS, LOGGING CROSS-SECTIONS,  
STRATIGRAPHY (Continued)

70. Michigan Geology Survey. Stratigraphic Succession in Michigan, Paleozoic Through Recent. Mich. Geol. Survey Chart 1, 1964.
71. Pomerene, J. B. Geology of the Portersburg Quadrangle, Kentucky. U. S. Geol. Survey Quad Map GQ-359, 1964.
72. Calvert, R. H. Geology of the Whitesville Quadrangle, Kentucky. U. S. Geol. Survey Geol. Quad Map GQ-419, 1965.
73. Clark, L. D. and M. D. Crittenden, Jr. Geology of the Mattingly Quadrangle, Kentucky-Indiana. U. S. Geol. Survey Quad Map GQ-361, 1965.
74. Cohee, G. V. Geologic History of the Michigan Basin. Wash. Acad. Sci. J., v. 55, No. 9, 1965, pp. 211-223.
75. Dever, G. R., Jr. Oil, Gas and Structure Map of Rowan County, Kentucky. Ky. Geol. Survey, Ser. 10, 1965.
76. Ellison, R. L. Stratigraphy and Paleontology of the Mahantanga Formation of South-Central Pennsylvania. Pa. Geol. Survey Bull. G-48 (Gen. Geol. Rept.), 1965, 298 p.
77. Fletcher, F. W. Upper Devonian Correlations - Northeastern Pennsylvania and Southeastern New York (Abstracts). Pa. Acad. Sci. Proc., v. 39, No. 1, 1965, pp. 22-23.
78. Price, R. C. and G. R. Dever, Jr. Oil and Gas Map, Sulpher Well Quadrangle, Kentucky. Ky. Geol. Survey, Ser. 10, 1964.
79. Rose, W. D. Oil, Gas and Structure Map, Madisonville West Quadrangle, Kentucky. Ky. Geol. Survey, Ser. 10, 1964.
80. Rose, W. D. Oil, Gas, and Structure Map, Nortonville Quadrangle, Kentucky. Ky. Geol. Survey, Ser. 10, 1964.
81. Seiders, V. N. Geology of the Hazard North Quadrangle, Kentucky. U. S. Geol Survey Quad. Map GQ-344, 1964.
82. Franklin, G. J. Geology of Hanson Quadrangle, Kentucky. U. S. Geol. Survey Quad. Map GQ-365, 1965.
83. Haught, O. L. Map of Barbour and Upshur Counties Showing Oil and Gas Fields, Structural Contours on Top of Greenbrier Limestone. W. Va. Geol. & Econ. Survey, 1965.
84. Haught, O. L. Oil and Gas Report on Barbour and Upshur Counties, West Virginia. W. Va. Geol. & Econ. Survey Bull. 31, 1965, 15 p.

STRATIGRAPHIC CORRELATIONS, LOGGING CROSS-SECTIONS,  
STRATIGRAPHY (Continued)

85. Haynes, D. D. Geology of the Hiseville Quadrangle, Kentucky.  
U. S. Geol. Survey Quad Map GQ-401, 1965.
86. Jillson, W. R. The Geology of Casey County, Kentucky. Roberts  
Printing Co., Frankfort, Ky., 1965, 108 pp.
87. Klemic, H. Geology of the Honey Grove Quadrangle, Kentucky.  
U. S. Geol. Survey, Quad Map GQ-376, 1965.
88. Lewis, R. Q., Sr. and R. E. Thaden. Geologic Map of the  
Cumberland City Quadrangle, Kentucky. U. S. Geol. Survey  
Quad Map GQ-475, 1965.
89. Lineback, J. A. Stratigraphy and Depositional Environment of the  
New Albany Shale (Upper Devonian and Lower Mississippian) in  
Indiana (Abstracts). Dissertation Abstracts, v. 25, No. 11,  
1965, p. 6538.
90. Lytle, W. S. Oil and Gas Geology of Warren Quadrangle, Pen-  
nsylvania. Pa. Geol. Survey Bull. (Mineral Resources Rept.)  
M-52, 1965, 84 p.
91. Maxwell, C. Geology of the Dunville Quadrangle, Kentucky.  
U. S. Geol. Survey Quad Map GQ-367, 1965.
92. Maxwell, C. Geology of the Philadelphia Quadrangle, Kentucky.  
U. S. Geol. Survey Quad Map GQ-395, 1965.
93. Mershon, R. E. Geologic Aspects of the Trempealeau Play in  
Central Ohio. Producer's Mo., v. 29, No. 7, 1965, p. 19.
94. Moore, F. B. Geologic Map of Sonora Quadrangle, Hardin and  
Larue Counties, Kentucky. U. S. Geol. Survey Quad. Map  
GQ-492, 1965.
95. Moore, S. L. Geology of the Hickory Flat Quadrangle, Kentucky-  
Tennessee. U. S. Geol. Survey Quad Map GQ-420, 1965.
96. Morris, R. H. Geologic Map of the Stricklett Quadrangle,  
Northeastern Kentucky. U. S. Geol. Survey Quad Map GQ-396,  
1965.
97. Rainey, H. C. Geologic Map of the Dennis Quadrangle, Logan  
County, Kentucky. U. S. Geol. Survey Quad Map GQ-450, 1965.
98. Rainey, H. C. Geology of the Auburn Quadrangle, Kentucky. U. S.  
Geol. Survey Quad Map GQ-415, 1965.
99. Rainey, H. C. Geology of the Dennis Quadrangle, Logan County,  
Kentucky. U. S. Geol. Survey Quad Map GQ-450, 1965.

STRATIGRAPHIC CORRELATIONS, LOGGING CROSS-SECTIONS,  
STRATIGRAPHY (Continued)

100. Swartz, F. M. Guide to Horse Shoe Curve Section between Altoona and Gallitzin, Central Pennsylvania. Pa. Geol. Survey Bull. (Gen. Geol. Report) G-50, 1965, 56 p.
101. Whiting, L. I. and D. L. Stevenson. The Sangamon Arch. Ill. Geol. Survey Circ. 383, 1965, 20 p.
102. Woodrow, D. L. Upper Devonian Stratigraphy and Sedimentation in Bradford County, Pennsylvania (Abstracts). Dissertation Abs., v. 26, No. 6, 1965, p. 3253.
103. Branson, E. R. Economic Geology of Allen County, Kentucky. Ky. Geology Survey, Ser. 10, County Report 1, 1966, 22 p.
104. Dennison, J. M. and A. K. Morrison. Facies Relations of Hystrichospheres in Onesquethaw Stage (Devonian) of Central Appalachians (Abstracts). Am. Assoc. Petrol. Geol. Bull., v. 50, No. 3, pt. 1, 1966, p. 610.
105. Forsyth, J. L. The Geology of the Bowling Green Area, Wood County, Ohio. Ohio Compass, v. 43, No. 4, 1966, pp. 202-214.
106. Jillson, W. R. The Geology of Estill County, Kentucky. Roberts Printing Co., Frankfort, Ky., 1966, 112 pp.
107. Kehn, T. M., E. E. Glick, and W. C. Culbertson. Ransom Quadrangle, Lackawana, Luzerne, and Wyoming Counties, Pennsylvania. U. S. Geol. Survey Bull. 1213, 1966, 81 p.
108. Knowles, R. R. Geology of a Portion of the Everett 15 Minute Quadrangle, Bedford County, Pennsylvania. Pa. Geol. Survey, 4th ser., Prog. Rept. 170, 1966, 90 pp.
109. Outerbridge, W. F. Geologic Map of the Paintsville Quadrangle, Johnson and Floyd Counties, Kentucky. U. S. Geol. Survey, Quad Map GQ-495, 1966.
110. Sparling, D. R. Geology of Ottawa County, Ohio (Abstracts). Dissertation Abs., Sect. B, Sci & Eng., v. 27, No. 1, 1966, p. 214B.
111. Englund, K. J., J. W. Huddle, and A. O. Delaney. Geologic Map of the West Liberty Quadrangle, Morgan County, Kentucky. U. S. Geol. Survey Quad Map GQ-589, 1967.
112. Fagerstrom, J. A. Stratigraphic and Paleographic Significance of the Holland Quarry Shale, Northwestern Ohio. Geol. Soc. Am. Bull., v. 78, No. 9, 1967, pp. 1185-1190.

STRATIGRAPHIC CORRELATIONS, LOGGING CROSS-SECTIONS,  
STRATIGRAPHY (Continued)

113. Franklin, G. J. Geologic Map of Coiltown Quadrangle, Hopkins County, Kentucky. U. S. Geol. Survey Quad Map GQ-629, 1967.
114. Jenkins, E. C. Geologic Map of the Millard Quadrangle, Pike County, Kentucky. U. S. Geol. Survey Quad Map GQ-659, 1967.
115. McGlade, W. G. Oil and Gas Geology of the Amith and Claysville Quadrangles, Pennsylvania. Pa. Geol. Survey, 4th Ser., Bull. (Mineral Resource Rept.) M-54, 1967, 131 pp.
116. Miller, R. C. and S. L. Moore. Geologic Map of the Center Quadrangle, South-Central Kentucky. U. S. Geol. Survey Quad Map GQ-693, 1967.
117. Oliver, W. A., et al. "Devonian of the Appalachian Basin, United States," in International Symposium on the Devonian System. Alberta Soc. Petrol. Geol., v. 1, 1967, pp. 1001-1040.
118. Palmer, J. E. Geologic Map of the Saint Charles Quadrangle, Hopkins and Christian Counties, Kentucky. U. S. Geol. Survey Quad Map GQ-674, 1967.
119. Schweinfurth, S. P. Geologic Map of the California Quadrangle, Washington and Fayette Counties, Pennsylvania. U. S. Geol. Survey Quad Map GQ-648, 1967.
120. Simmons, G. C. Geologic Map of the Palmer Quadrangle, East-Central Kentucky. U. S. Geol. Survey Quad Map GQ-613, 1967.
121. Smith, J. H. Geologic Map of the Rockholds Quadrangle, Whitley and Knox Counties, Kentucky. U. S. Geol. Survey Quad Map GQ-677, 1967.
122. Smith, J. H. Geologic Map of the Wofford Quadrangle, Whitley County, Kentucky. U. S. Geol. Survey Quad Map GQ-677, 1967.
123. Tabor, R. W. Geologic Map of the Williamsburg Quadrangle, Whitley County, Kentucky. U. S. Geol. Survey Quad Map GQ-616, 1967.
124. Walker, F. H. Oil and Gas Map of Letcher County, Kentucky. Ky. Geol. Survey, Ser. 10, 1967.
125. Barr, J. L. and H. H. Ar t. Geologic Map of Dorton Quadrangle, Co., Kentucky. U. S. Geol. Survey Quad. Map GQ-713, 1968.
126. Rice, C. L. Geologic Map of the McDowell Quadrangle, Floyd and Pike Counties, Kentucky. U. S. Geol. Survey Quad Map GQ-713, 1968.

STRATIGRAPHIC CORRELATIONS, LOGGING CROSS-SECTIONS,  
STRATIGRAPHY (Continued)

127. Rice, C. L. Geologic Map of the Redbush Quadrangle, Eastern Kentucky. U. S. Geol. Survey Quad Map GQ-708, 1968.
128. Oliver, W. A. Correlation of Devonian Rock Units in the Appalachian Basin. U. S. Geol. Survey Oil Inv. Chart, OC-64, 1969.
129. Schwietering, J. F. Devonian Shales of Ohio and their Eastern Equivalents. Dissertation Abs. International, Sec. B., Sci. & Eng., v. 31, No. 4, 1970, p. 2067B.
130. Wood, G. H., Jr. Stratigraphic Framework of Relatively Unexplored Section of Devonian to Basement (Abstracts). Am. Assoc. Petrol. Geol. 5610, 1972, pp. 2111.1.

**SUNBURY\***

1. Hicks, L. E. Am. J. Sci., 3rd, v. 16, 1878, pp. 216, 220.
2. deWitt, W., Jr. Geol. Soc. Am. Bull., v. 62, No. 11, 1951, p. 1163.

\*Titles for articles were not given in indexing source.

**TIOGA BENTONITE BED\***

1. Ebright, J. R., C. R. Fettke, and A. I. Ingham. PA Geol. Survey, 4th Ser., Bull. M-30, 1949, p. 10.
2. Fettke, C. R. Am. Assoc. Petrol. Geol. Bull., v. 36, No. 10, 1952, pp. 2038-2040.
3. Oliver, W. A., Jr. Geol. Soc. Am. Bull., v. 65, No. 7, 1954, pp. 629, 631, pl. 1.
4. Dennison, J. M. Disert. Abs., v. 21, No. 3, 1960, p. 593.

\*Titles for articles were not given in indexing source.

TRAVERSE GROUP OF MICHIGAN BASIN

1. Jodry, R. L. Reflection of Possible Deep Structures by Traverse Group Facies Changes in Western Michigan. Am. Assoc. Petrol. Geol. Bull., v. 41, No. 12, December 1957, pp. 2677-2694.

**UNION SPRINGS SHALE MEMBER\***

1. Cooper, G. A. Am. J. Sci., 5th, v. 19, 1930, pp. 132, 218-219, etc.
2. Cooper, G. A., et al. Geol. Soc. Am. Bull., v. 53, No. 12, Part 1, p. 1745.
3. Woodward, H. P. Devonian System of West Virginia. W. Va. Geol. & Econ. Survey, v. 15, 1943, pp. 329.

\*Titles for articles were not given in indexing source.